Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS

VOLUME XII. NEW-YORK, DECEMBER 27, 1856. NUMBER 16.

THE
Scientific American,
PUBLISHED WEEKLY
At 128 Fulton street, N. Y. (Sun Buildings.)
BY MUNN & CO.
O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns in the United States.
Sampson Low, Son & Co., the American Booksellers, 47, Ludgate Hill, London, Eng., are the English Agents to receive subscriptions for the Scientific American.

Single copies of the paper are on sale at the office of publication and at all the periodical stores in this city, Brooklyn, and Jersey City.

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Bottomless Pit in the Mammoth Cave.

The bottomless pit in the Mammoth Cave of Kentucky is suspected by many to run through the whole diameter of the earth. The branch terminates in it, and the explorer suddenly finds himself brought upon its brink, standing upon a projecting platform, surrounded on three sides by darkness and terror, a gulf on the right and a gulf on the left, and before him what seems an interminable void. He looks aloft, but no eye has yet reached the top of the great over-arching dome ; nothing is there seen but the flashing of the water dropping from above, smiling as it shoots by in the unwonted gleam of the lamp. He looks below, and nothing there meets his glance save darkness as thick as lampblack, but he hears a wild, mournful melody of water, and the wailing of the brook for the green and sunny channel left in the upper world never more to be revisited. Down goes a rock, tumbled over the cliff by the guide, who is of the opinion that folks come here to see and hear, not to muse and be melancholy. There it goes—crash! it has reached the bottom. No—hark, it strikes again ; once more and again, still falling. Will it never stop? One's hair begins to bristle as he hears the sound repeated; growing less and less until the ear can follow it no longer. Certainly, if the pit of Frederick shall be eleven thousand feet deep, the bottomless pit of the Mammoth Cave must be its equal.—[Phila. Ledger.

[Has no scientific effort been made to plumb this deep gulf? A set of experiments for determining its depth and varying temperature, according to its depth, would be a matter of great interest to men of science.

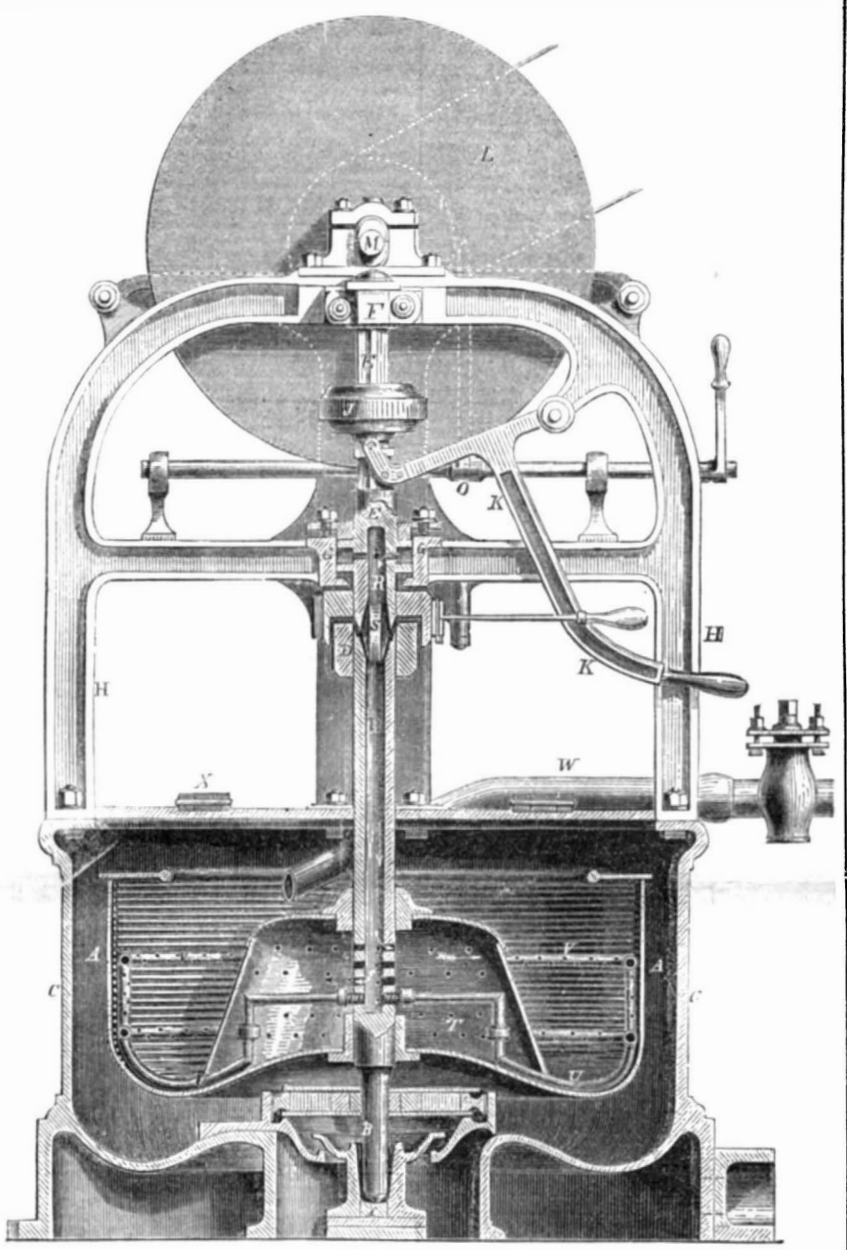
California Horse Chesnuts.

E. Hughes, of Santa Clara, California, informs us that horse chesnuts are very abundant in that county, and they possess some peculiar properties. They are of the dwarf kind—not exceeding fifteen feet in hight. They yield a great abundance of nuts which afford food for numerous ground squirrels, and while in blossom they yield the finest perfume of all the trees in California. He is preserving some of the nuts to send them to friends in the Atlantic States. They will be a beautiful acquisition to our gardens, parks, and pleasure-grounds. The husk of this chesnut makes a lather with soft water, like that of soap, and the inner bark of the tree possesses the same properties. It is therefore a useful as well as a very beautiful tree.

Rhode Island Coal for Gas Manufacture.

The Springfield *Republican* learns that the Chicopee Gas Company, after careful experiments, have decided to substitute for the Pennsylvania and Cannel coals, a new bituminous coal recently found in Cranston, R. I. "This coal," says the *Republican*, "has illuminating qualities equalled by no other variety, and the Company are better satisfied to receive 2 3-4 mills per foot for its gas than 4 mills for the gas as made at present, while at the same time the light furnished will be of a better quality—two very desirable results. The substitution will be made after the first of January, 1857."

COTTON BLEACHING MACHINE.



The accompanying figure is a vertical section of a peculiar application of the centrifugal drying machine to the bleaching of cotton cloth and such-like fabrics, and it may be the means of entirely revolutionizing the present processes of bleaching pursued in bleach-works and calico print-works.

The centrifugal apparatus ordinarily consists of a chamber of some permeable material, mounted upon a vertical spindle. Steam or heated water is passed into the chamber through a tubular shaft, so as to mingle with the goods, and the chemical ingredients employed in the process. The steam, supplied to aid the operations is conveyed into the chamber, by preference, through the tubular shaft, but it may be admitted from the outside, and directed against the rotating permeable wall of the chamber. An apparatus of this kind may obviously be arranged to operate with great effect upon textile fabrics and materials, as the bleaching and cleansing ingredients and the steam may be passed most rapidly and forcibly amongst and through the goods in the rotating chamber by the centrifugal force due to the rapid rotary action of the chamber. As the ingredients and fluid matters are thrown off and through the sides of the chamber, they are returned again and again to the goods until the desired effect is produced. The centrifugal apparatus, applied in this way, may rotate either upon a vertical spindle or upon a spindle more or less inclined to the vertical line.

The apparatus resembles, in its general construction, the machine known as the "hydro-extractor," for drying goods by the application of centrifugal force. It consists of a cylindrical casing or receptacle, A, mounted upon a vertical spindle or shaft, B, and placed inside a cylindrical chamber or vessel. C. The casing or receptacle, A, consists of wire-work attached to metal ribs and framing, and is permeable for the passage through it of fluids. The shaft, B, is connected by a coupling, D, to a short shaft, E, above, and in a line with it and carried in upper and lower collar bearings, F G, upon the arched frame standard, H, bolted down upon the vessel, C. The coupling, D, is introduced to allow of a limited degree of angular movement in the shaft, B, the footstep bearing, I, of which is made movable for the same purpose. The shaft, E, carries a friction pulley, J, capable of moving vertically upon it, but fitted with groove and feather, being lifted up or down, as required, by means of a forked lever, K. The circumferential surface of the pulley, J, is in contact with the surface of a large disk, L, by which it is driven, this disk being fast on a short horizontal shaft, carried in bearings upon the framing standards, H. This shaft carries fast and loose pulleys, as shown by dotted lines, to receive a driving strap from an over-head shaft, the strap being shifted by means of the forked bell-crank lever, O. A bracket is bolted to the back of the framing to receive a spindle, by means of which the shaft, M, is pressed forward, so as to hold the disk, L, in close driving contact with the pulley, J. This pulley is made movable on its shaft, E, in order to vary the speed of the casing or receptacle, the speed being reduced or increased accordingly as the pulley, J, is shifted nearer to or further from the center of the disk, L. These parts are common to the ordinary hydro-extractors; but the manner in which the apparatus is arranged for carrying out the present invention is as follows :—The lower portion of the shaft, E, is made hollow, and the lower bearing, G, takes the form of a hollow stuffing-box joint, communicating with the pipe, R, the shaft, E, being formed with apertures communicating with the hollow stuffing-box joint. The shaft, B, is likewise made hollow, and a metallic thimble or a flexible coupling piece, S, is inserted at the coupling, D. The lower portion of the shaft, B, is formed with apertures for the egress of fluids from the central passage. The steam or other fluid introduced by the pipe, R, and through the tubular shaft, B, issues from the latter into a space enclosed by a perforated casing, T, and within the receptacle, A, and from this casing it issues amongst the goods or other articles to be operated upon. Branch pipes, U, are also fitted to the tubular shaft, B, to convey the steam or other fluid to perforated pipes, V, encircling the receptacle. By these means the steam or whatever fluid is introduced into the apparatus, is made to pass in amongst and through the goods or articles being operated upon. Arrangements are also made for introducing water or other liquids, or even steam, into the receptacle, A, by means of a pipe, W, the mouth of which is curved down into the open space in the receptacle. A cover. X, is formed with a hinged door for the introduction and removal of the goods. The liquids which are passed into the receptacle, A, amongst the goods find their way through the permeable sides thereof, being forced through by the centrifugal force induced by the rapid rotary motion communicated to the receptacle. These liquids are caught by the vessel, C, whence they are drawn off by a passage at the right hand side, at the bottom, and they may be passed through the apparatus, and through the goods over and over again, being re-introduced into the apparatus by either or both of the pipes, R W. When the goods are sufficiently acted upon by the steam and liquids, they may be dried before removal from the machine by discontinuing the introduction of steam or liquids, and keeping up the rotation of the apparatus, until the centrifugal action carries off all the moisture out of the goods, as in an ordinary hydro-extractor.

The patentee is James Wallace, Jr., of Glasgow, Great Britain, who has obtained patents in England and the United States. His American patent was granted on the 30th September last; and the claim will be found on page 34, this volume SCIENTIFIC AMERICAN. The use of a dash wheel involving the same application of the bleaching liquor, (as shown in this figure,) to the cloth, is covered by the claim. The present plans of bleaching cotton cloth, generally practiced, require huge tanks containing the bleaching liquor, and involve tedious manipulations and severe labor. The method here illustrated, it is believed, will greatly shorten the process, and save an immense amount of labor.

Clough's Polishes.

That indefatigable benefactor to all good housewives, I.S. Clough, Esq., of Philadelphia, Pa., has sent us samples of his liquid polish for furniture, and polish for stoves. The furniture polish is a superb article of the "first water," and that for stoves makes them shine with a luster equal to the polished heel of a genuine gentleman of color. Such polishes *are* polishes in deed, as well as word, and the gratitude of the community is due to such a caterer for the shining parts of domestic affairs.

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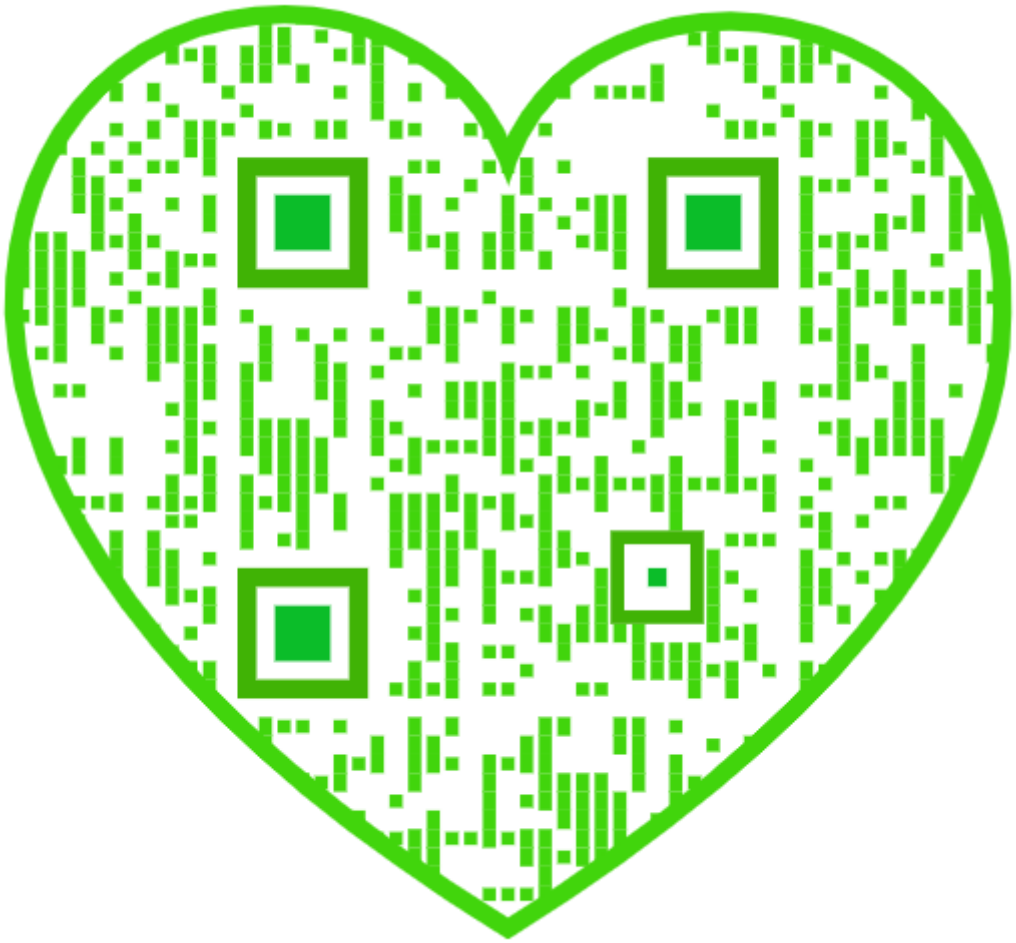

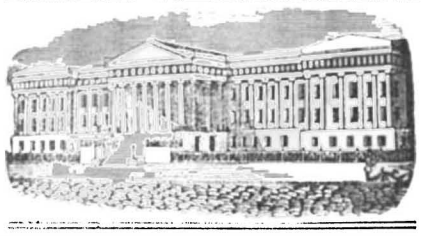

Important Notice.

When an individual has made an invention, the first inquiry that naturally suggests itself is, "*Can I obtain a Patent?*" A *positive* answer to such questions is only to be had by presenting a formal application for a patent to the government, embracing a petition, and oath, specification, model, two drawings, and the payment of the official fees. Aside from these steps, all that the inventor can do is, to submit his plans to persons experienced in the business of obtaining patents, and solicit their opinions. If they are honorable men, he may confide to them his ideas with perfect safety, and they will inform him whether or not they regard his invention as patentable.

Those who wish to consult with ourselves on such matters, are at liberty so do so, either in person, at our office, or by correspondence through the mails. For such consultations we make *no charge*. We shall be happy, at all times, to examine inventions, and will give conscientious opinions as to their patentability.

Pen and ink sketches of the improvement, and a written description of the same, should be sent. Write plain; do not use pencil or pale ink, and be brief. Remember that all business committed to our care, and all consultations are kept by us secret and strictly confidential.

Parties wishing to apply for patents are informed that they can have the necessary drawings and documents promptly prepared at this office, on the most reasonable terms. It is not necessary for them to go to the expense of a journey in order to be personally present. All the required business can be just as well arranged by correspondence. Models may be sent by Express.

We have been engaged in the business of procuring patents for years, and have probably had more experience than any other firm in the country, owing to the fact that the amount of business done by us equals, if it does not exceed, that of all other professional patent agents in the United States combined. A large proportion of all the patents annually granted by the American government, are prepared and conducted by our firm.—We have in constant employment an able corps of examiners and draughtsmen, whose duties are so systematically arranged, under our own personal supervision, that every case committed to our care, receives the most careful study and attention, and the most prompt dispatch. In every instance we endeavor so to draw up the claims and prepare the whole case, that the patent, if granted, will stand the test of the courts, and be of value to the owner. Patents secured through our agency are scattered all over the country, and in this respect they speak for themselves.

In addition to the advantages which the long experience, great success, promptness and moderate charges of our firm, in obtaining patents, present to inventors, they are informed that all inventions patented through our establishment, are noticed editorially, *at the proper time*, in the Scientific American, without charge. This we are enabled to do from the fact that, by preparing the case, we become familiar with its peculiarities. Our paper is read by not less than 75,000 persons every week, and has a wide-spread and substantial influence.

Inventors, we believe, will generally promote their own interests by confiding their patent business to our care.

MUNN & CO.,
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[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING DECEMBER 16, 1856.

Adjustable Cant Hook—Mark Allcutt, of Hancock, N. H.: I claim the arrangement and combination of the lever, with its pawl and slot, and the hook with its ratch notches, substantially as described, and composing an improved cant hook, as specified.

Grinding Saws—Emanuel Andrews, of Elmira, N. Y.: I claim, first, the manner described, or its equivalent, for decreasing the transverse motion of the stone when I wish to grind the most, as at the outer edge of the saw, and increasing the same when I wish to grind less, as at the center of the saw, as set forth.

Second, I claim the manner described, or its equivalent, for the adjustment of the stone, for the purpose of using a portion of the grinding surface of the same, at pleasure, or all the grinding surface if desired, as set forth.

I claim grinding saws to a taper, as described, by means of the adjustable face plates, in combination with the pivot boxes, O2, and sliding and yielding guides, M and O', as set forth.

Padlock Case—Solomon Andrews, of Perth Amboy, N. J.: I claim the making of the body or case of a padlock of one piece of wrought metal.

Planing and Tapering Wooden Hoops—Clark H. Brown, of Forest Port, N. Y.: I do not claim the circular saw and rotary planer, for they have been previously used for analogous purposes.

But I claim the combination of the saw, C, and the adjustable or sliding planer, G, operated or adjusted by the movement of the carriage, B, through the medium of the lever, F, and the pendant, g, and arm, i, on the carriage, B, substantially as shown and described, for the purpose set forth.

[In this machine a circular saw and an adjustable rotary or sliding planer are combined and operated in an improved manner to saw and taper strips for hoops from bolts of timber, and plane or dress them at one continuous operation. The machine is simple, can be constructed at a small cost, and operates well.]

Bake Pans—Wm. Beach, of Philadelphia, Pa.: Disclaiming the ordinary lapping of this metal pan corners as altogether distinct from my invention.

I claim the construction of metallic bake pans with rounded corners, formed as described, by notching, cutting, lapping, and riveting, substantially as set forth.

Pumps—Jabez Correy, of Boston, Mass.: I claim, first, producing the reciprocating movement of the pump pistons by the oblique disk, steel balls and adjustable steel sockets, constructed and operating substantially as described.

Second, constructing and arranging the duplicate cylinders, with their double-acting pistons in any odd numbers, five being the best, around the driving shaft, with its oblique disk, so as to be operated thereby from the center, substantially as described.

Third, enclosing the working parts in an oil cylinder, to keep them lubricated and free from dirt, substantially as described.

Valve Motions for Steam Engines—John Butler, of Dunmore, Pa.: I do not claim the use of two eccentrics to give the valve two distinct movements to admit and cut off the steam.

But I claim the arrangement of the two rock shafts, E F, with their rockers operating upon a yoke, b, or its equivalent, attached to the valve stem, said rock shafts deriving motion from separate eccentrics, and the whole operating substantially as described.

[This improved valve motion of steam engines consists of a certain arrangement of eccentrics and rock shafts, rockers, and a yoke to actuate a slide valve, so as to make it serve both as an induction and eduction valve and a variable cut-off. By the arrangement a very quick movement can be given to the valve in opening and closing, while the ports are allowed to remain wide open during as much of the stroke as is desired. This valve motion is is an ingenious improvement.]

Spring Bolt—Wm. E. Copeland, of Fall River, Mass. I do not claim combining a lever with a bolt, and for the purpose of moving the said bolt rearward, because such is a very old application of a well-known device.

Nor do I claim so combining a lever with a spring bolt and its case as to operate the bolt, substantially in the manner as described in the specification of the patent of Bush, that is to say, so that it shall operate not only as a cam lever, but as a stop.

Nor do I claim applying to a bolt or a rod a lever and a stop, and in such manner that the bolt or rod not only may be moved by power applied to the lever, but may be stopped or held in place by the stop acting against the lever, for such is an old and well-known contrivance.

But I claim as an improvement on the invention as patented by the said Bush, my improved arrangement of the stop lever, H, with respect to the bolt, and so as to operate therein, and into and out of the bolt cas , substantially as specified.

I also claim combining with the main spiral spring, D, the secondary and separate spiral spring, E, or its equivalent, when the bolt is applied to its case, and the springs are arranged within a trapezoidal recess, or chamber of the bolt, and made so as to operate essentially as specified.

Water Mill—John Heller, of East Lampeter, Pa.: I claim the "Portable Quadruple Water Power," arranged and combined, substantially as described.

R. R. Car Coupling—Charles Flanders, of Charlestown, Mass.: I do not claim the mere application of a lever to the shackel pin, for the purpose of elevating the same.

Nor do I claim connecting such lever to such pin by a chain or any other flexible equivalent, but for the purpose of steadying the pin, maintaining it in its proper position with respect to its hole in the draw bar, and enabling it to be drawn downwards.

I claim combining and arranging the lifter, D, and the spring, G, with the pin, a, the draw bar, C, and the elevating lever, E, so as to operate therewith, substantially as specified.

I do not claim the combination of a horizontally acting hook with a vertically moving box arranged in a draw bar, made to slide longitudinally and against springs, and merely for the sake of disengaging the hook from its fellow, such having been patented by Joseph Miller, Nov. 14th, 1854.

But I claim the same, consisting in arranging the draw bar itself, so as to rock or tilt on a bearing, I, and to slide through a stirrup, K, applied to a system of levers, L M, whereby the draw bar itself may be moved vertically, so as to properly adjust its receiving mouth with respect to that of another draw bar as may be necessary in order to couple two cars together.

Skate Runners—John E. Forbes, of Hoboken, N. J.: I do not confine myself to common iron skates alone, but steel blades or runners may be successfully used until they are entirely worn out, which is not the case with the skates that are in common use, for they cannot be kept sharp, consequently are abandoned.

Therefore, I claim forming the iron or runner of two parts or plates, a and b, for the purpose and in the manner substantially as described and shown.

Filtering Faucet—Geo. H. Fox, of Boston, Mass., and Henry J. Siller, of East Cambridge, Mass.: We claim causing a portion of the water which has passed through the filter to return in the opposite direction whenever the cock is closed after using it for the purpose of cleansing the filter, as set forth.

Lifting Jack—Harvy Gray, of Bristol, Conn.: I do not claim the screw, yoke, rollers, pawl, or ratchet, separately considered, for I am aware they are in use for various uses.

But I claim the employment of the screw, E, yoke, F, roller, G, pawls, i, ratchets, k, in combination, substantially and for the purpose as set forth.

Sewing Machines—James E. A. Gibbs, of Mill Point, Va.: I claim, first, feeding up the thread to the needle by connecting the needle thread with the cloth feed motion or by giving the needle thread an independent feed motion, so that there shall be sufficient thread, and no more, at each stitch fed in to the needle to form the stitch, thereby causing the needle to draw the shuttle thread into the cloth, and never above it, for the purpose of ensuring the meeting of the loops or locks within the body of the cloth.

Second, I do not claim straight clamp feeders for the purpose of feeding the cloth, as they are not new.

But I claim fastening the cloth upon a slotted table, moving with a rectilinear motion by means of a slotted curved spring, the slots in both spring and table corresponding with each other, and holding the cloth on both sides of the seam.

Field Fence—James G. Hunt, of Reading, O.; I claim the compound triangular brace, as shown and described, for the uses and purposes set forth, in combination with the projection of one or more rails in whole part of one section or panel beyond the slats or battens, and between the slats or battens of the adjoining panel.

Sewing Machines—Lewis Jennings, of New York City: I do not claim the belaying double-looped stitch, described in the patent of W. H. Johnson, dated March 7th, 1854.

I claim, first, the formation of the seam from a single thread by passing each loop, after it has passed through the cloth, or material to be sewed, through its immediate successor, and round the second one which succeeds it, by means of a needle and a "thumb and finger," operating substantially as described.

Second, the combination of the arm, F, to which the thumb and finger, b c, are attached, the pivot, f, the slotted arm, i, the fixed pin, j, and the lever, G, or its equivalent, substantially as and for the purpose set forth.

[The common lock stitch in single thread sewing machines, when the thread is broken, is very easily ripped. In this machine there are peculiar devices for performing operations to form strong single thread stitching that will not rip out. Instead of each loop being interlaced with its immediate predecessor and successor formed by the needle, as in the common single threa sewing machines, each loop interlocks with the second one that precedes it, and the second that succeeds it, and in this manner makes a seam that will not rip. The improvement is ingenious, and unmistakably useful.]

Ship's Windlass—Peter H. Jackson, of New York City: I claim the double-acting pawl, 2, crank arm, 4, and counter weight, 5, applied to the heaver or heavers of the windlass, arranged and operated substantially as and for the purposes specified.

Photographic Baths—Wm. Lewis and Wm. H. Lewis, New York City: We do not claim a hinged leg or support to the bath; but we are not aware that the hinged leg and button have ever before been combined together, for the purposes specified.

Neither do we claim a glass bath in itself, as baths have heretofore been made of plates of glass cemented together; and also circular vessels have been made use of, and elongated baths of gutta percha have been used, formed with one curved side: but we are not aware that solid glass baths have ever before been formed in a flattened or elongated shape, with the sides and bottom in a curved shape, as and for the purposes specified.

We claim retaining the nitrate of silver bath in the desired inclined position, by the combined operation of the leg, c, and button, e, for the purposes and as specified.

We also claim the solid glass pot, f, when formed with the curved sides and bottom, for the purpose of protecting the plate from injury by contact with the bath or any sediment, in the manner specified.

Grinding Paper Pulp—Joseph Kingsland, Jr., of Franklin, N. J.: I claim the combination of the revolving grinding disk, having play in the direction of its axis, with the fixed grinding disks on either side of it, whereby the revolving disk is free to adjust itself at such varying relative distances from the fixed disks as may be required to prevent the girder from clogging, and to adapt it to working properly upon different qualities of fibre, and under different rates of feeding, substantially as set forth.

I also claim the arrangement of the feeding and discharging orifices of the grinder and it grinding surfaces, as described, so that the motion of the revolving disk will facilitate the entrance of the fibre into the grinder, tend to retard its discharge therefrom until properly reduced, and to keep it, while in at those places where the grinding action is most energetic, substantially as set forth.

Paring Apples—Horatio Keyes, of Leominster, Mass. I claim giving the knife a circular movement entirely around the fork, G, and apple thereon, by means of the wheel, K, with the arm, M, and knife head, F, attached, and the cam, o, arranged as shown, or in any equivalent way, to effect the purpose desired.

[The knife in this apple-paring machine is arranged in such a manner that it is allowed to pass completely around the apple, thereby obviating the necessity for any backward or reverse motion of the knife, as in common apple-parers Other fruit can be pared with it, equally as well as apples. This is an exceedingly simple apple-parer.]

Wiring Blind Rods—T. F. St. John, of Le Roy, N. Y.: I claim, first, the device formed of the reciprocating bars, p p, provided with the lever, q, having hook, s, at its lower end, the bars, I I, attached to the uprights, M M, the lever, q, being operated substantially as shown, by which device the staples are properly formed, and when formed, driven or forced into the rods or slats.

Second, I claim the combination of the reciprocating bars, p p, and lever, q, arm or lever, J, with cutter, K, attached, the reciprocating bar, G, with dog, d, and arm, e, attached, and the cam, S, the whole being arranged and operating conjointly, as described, for the purpose specified.

R. R Gate for Cattle Guard.—J. T. McIntyre, of Middletown, Del.: I claim the arrangement of the tilting platforms, and the tilting cattle guards with each other and in connection with the rails of railroads at the crossing of common roads, in such a manner that the attempt to pass to the right or to the left, from said crossings on to the track, or space between the enclosing fences, will, by the weight of the animals making the attempt, instantly raise a barrier before them, across the entire width of said railway space, substantially in the manner and for the purpose set forth.

Harvesting Machines—Robert Morrison, of Richmond Va.: I claim hinging the guard or shield by one of its ends, to the frame, and supporting the other end thereof on the tongue, so that it may run or move on said tongue, when the machine rises or falls, to accommodate itself to the inequalities of the ground, or for passing over water courses, substantially as described.

Printing Hat Linings—Wm. Moultrie, of New York City: I claim the application and employment of the printing cylinder, K, described, or its equivalents, in combination with the feed and impression rollers, the fountain, B, the endless tapes, M N T U, the drying vessel, G, and the revolving brush, P, when used in the manner substantially and for the uses and purposes mentioned.

Chimney Cowls—Patrick Mihan, of Boston, Mass.: I do not claim surrounding the main flue of a chimney, with an air flue, whereby air may be thrown upward between the two, and over or above the discharging or upper end of the smoke flue, in order to promote the draft Nor do I claim arranging an inverted cone in or above the discharging end of a smoke flue.

I claim the arrangement of hollow frusta, B C, with respect to each other, a smoke flue, A, and an inverted cone deflector, D, placed at and in the upper end of said smoke flue, A, as set forth.

I also claim arranging on the flat top surface of the deflector, D, as described, an enclosing deflecting guard, E, and a discharge spout, F, the same being disposed, so as not only to gather the water which may fall on the top of the cone, and discharge it in one stream upon the inner surface of the upper external frustum, B, but so that the guard may serve to deflect, as described, a current of air; which may strike on the top of the cone, D.

I do not claim providing a ventilator or chimney cap, with a cap plate, elevated on columns or rods extending above the rest of the cap or ventilator.

I claim providing the cap plate, G, when it is directly over the conical deflector with an opening, while the remainder of the cap plate may extend over the opening between the cone, D, and the outer cone, B, as described, the same being to allow air to pass through the cap plate, and impinge on the top surface of the cone, D, in manner and for the purpose as described.

Mowing and Reaping Machine—J. W. Mulley, of Amsterdam, N. Y.: I do not claim placing the platform lower than the wheel frame. Neither do I claim the large driving wheel in connection with an elevated main frame.

I claim connecting the frame of the platform with the frame carrying the driver's and raker's seat, in the manner substantially as set forth, namely, securing the relative position of the frames by means of the brace, J, in the rear, and the laterally inclined draw shoe in front, when the above parts are constructed and arranged as described.

I also claim the rod, 4, and the rails, 5, connected in the manner described, in combination with the pole, N, the rocking shaft, 3, and the lever, 2, the whole being constructed, arranged, and operated in the manner specified and for the purpose set forth.

Weaving Shade Cord—Thos. Nelson, of Troy, N. Y. I claim the arrangement of the inclined planes, C C, G G, around a circle, and divided from each other, by the chasm or pathway, Z, the same being intended as the course or track of the spool cars.

I claim the arrangement of the spool cars, in combination with the eccentrics, M & N, which operate the cars in the rear of the inclined planes, by means of pens or equivalent apparatus passing from the cars through slots in the planes.

I claim the arrangement of carriers or shuttles, U U2, attached to the eccentrics passing through the chasm, Z, between the upper and lower planes, and traversing circularly and delivering the woof or filling, between the threads of the warp, as they change their relative positions, by the alternate vibrations and depressions of the spool cars.

Grinding Mill—T. B. Stout, of Keyport, N. J. I do not claim, simply, feeding the corn or grain, through the sides of one of the burs; nor do I claim a dress composed of alternate long and short ridges, together with feeding spaces, in themselves, separately.

I claim the arrangement and combination of the feeding cavities, a a, feeding apertures, g g, and the form of dress given to the grinding surfaces, substantially as specified.

Metallic Slats for Blinds—J. S. Sanson & W. P. Farrand, of Philadelphia, Pa.: We claim the combination of bed beam and shear with the spring stops, constructed, arranged and operating substantially as and for the purposes set forth.

Reaping and Mowing Machines—D. C. Smith, of Tecumseh, Mich.; I claim the combination of rock shaft, H, with hollow rock shaft, K, when the same are connected for joint operation in moving two sickles at once, by means of mechanism described, and arranged and operated, in relation to each other, from main wheel A, as set forth.

Securing Springs in Upholstery.—W. Wright, of New York City: I claim securing the spring, A, to its seats, B B, by having annular grooves, a, made in the seats, one in each, and having the greater portion of the coils, c, at the ends of springs, made or bent in horizontal form, and somewhat larger in diameter than the grooves, a, so that they will have a requisite bearing on the seats, and be retained by their elasticity within the grooves, as described.

[This improvement secures upholstery springs, for mattrasses, &c., on their seats, in a superior manner. An annular groove is made in each spring seat, and a portion at each end of the spiral is made horizontal and somewhat larger in diameter than the grooves, therefore, when fitted into their seats they are retained more firmly by their elasticity.]

Boring Machine—Samuel Klahr, of Reamstown, Pa. I claim the arrangement and combination of the shaft, X endless screw, Z, pinion, V, and pulleys, T, as operating on an endless chain and railway carriage for the purpose of boring pump stocks, as described.

I also claim the shape and construction of the pinion, V, and pulleys, T, with pins, U, solid on one shaft, for the purpose set forth.

I do not claim the combination and arrangement of the drum, J, with the device for operating the drum, C.

But I claim the combination and arrangement of the drum, J, with the device for operating both of the carriages, C and 2, for boring post and pump stocks, forming a neat portable machine, substantialy as set forth.

Finger Bar for Harvesting Machines—Wm. H. Seymour, of Brockport, N. Y.: I do not confine myself to the form of finger bar I have described, for so long as it is made hollow, it may be varied in shape and proportions, without any departure from the principle of my invention

I claim, first, casting the finger bar, composed of an upper and an under plate, united by the guard fingers all in one piece, substantially as described.

Second, the openings in the back of the hollow finger bar, in combination with the inclined ribs, for the purpose and in the manner described.

Third, ribs or partitions constructed and arranged substantially as described.

Apparatus for Coal Oil—Richard Shroder, of Darlington, Pa., assignor to Jno S. Russell, of Pittsburg, Pa., and Richard Shroder and Alex. Anderson, of Beaver Co., Pa.: I do not claim, broadly, the extraction of oil from bituminous coal, excepting in the manner described

But I claim constructing the retort, or generator, with openings at different hights, as shown, for the purpose of obtaining oil of different qualities, as set forth.

Cutting and Folding Paper—Charles Moore, of Hartford, Conn., assignor to W. G. Sheldon, of New York City, and L. B. Chandler and Chas. Moore: I claim, first, the use of a frisket with a blade or cutter attached thereto, in combination with a stationary cutter or blade, for the purpose of cutting a sheet of paper in two parts, by one and the same operation.

Second, I claim the crimping blades, V V2 n, operating in the manner substantially as specified and for the purposes set forth.

Third, I claim, in combination with the crimping blades, the use of folders, either with or without the auxiliary frisket, when constructed and operated substantially in the manner set forth.

Fourth, the use of auxiliary friskets, when operated by projecting pins, or by any other competent mechanism, in conjunction with the folder, to carry over such parts of the sheet to be folded, as will not, when operated upon by the folding blade, sustain and carry over their own weight.

Fifth, the combined contrivance of the take off, and the crimping blade of the last fold, or the combination of the take off with any other blade designed to co-operate therewith for the purpose of clasping the folded sheet or sheets; and of carrying them off, and of discharging them from the machine.

Sixth, I claim the arrangement of the spring and pawl or their equivalents, operating the take-off, in the manner specified.

Seventh, the use of sliding or movable beds, C C, with hanging sides, D D, as a means of arranging the cutting, crimping, and folding mechanism, and all the cams, levers, springs, racks, &c., which operate the same, so that the machine may be expanded or contracted, without disarranging the parts on which the proper motions depend.

Eighth, I claim the punching points or pins, in connection with the corresponding holes of the crimping blade, n.

Wind Mills—S. W. Ruggles, (assignor to Silas Ruggles,) of Fitchburgh, Mass.: I claim the disk, J, and buckets, K, in combination with the wire or rod, I, connected with the vane bar, E, and arranged as described, for the purposes specified.

[This is a peculiar and ingenious windmill. It has secured to a convex disk, a series of expanding buckets, which open and close, as they rotate on a vertical shaft, for filling with the wind, and then collapsing when coming round against the wind. They are opened and closed by an adjustable rod attached to a rotating frame, so as to receive the force of the wind at the proper angle, and then close at the proper time.]

Reaping and Mowing Machines—T. D. Burrall, of Geneva, N. Y.: I do not claim the cutter bar cutters or guards, in themselves, as these are well known.

Neither do I claim bringing a notched or turned edge in contact with the lower side of the vibrating cutters, as this has been used, when the stationary cutters were made in one piece of sheet metal, and said metal folded over, to serve as a finger board; but I am not aware that the finger-board has been before been formed with a continuous lip or rib, at the front edge, coinciding or nearly so, with the front edge of the vibrating cutter bar, when free space is allowed below and behind said cutter bar for any extraneous substance to free itself, and pass away with the grass or grain, to the rear of said finger board, as the machine advances.

I claim placing the front edge of the cutter bar on the line, or nearly so, of the front edge of the finger board when said finger board is formed with the raised front edge or lip, leaving free space below and behind the cutter bar, for any extraneous substances to escape from beneath said cutter bar, and pass freely away to the rear with grass or grain, as specified.

Drying Grain in the Mass—J. C. Pedrick, of Washington, D. C.: I claim the double convex lenticular vessel, or perforated exhaust chamber, B', or its equivalent, constructed and operated as set forth, for drying grain in bulk, in granaries, or in vessels.

ADDITIONAL IMPROVEMENT.

Hubs for Carriages—Joseph Smith, of Delaware, O.: I do not claim making the hub in sections, nor the use of two sets of anti-friction rollers, as that has been done before.

But I claim additional to the patent granted me on the 19th day of Feb, 1856, is the combination of the boxes, c c, cylinder, d, board, k, with the rollers, i i i, all arranged substantially as described and for the purposes set forth.

Cotton Seed for Oil.

The New Orleans *Picayune* notices the engagement of a ship of 800 tuns to take a full cargo of cotton seed from that port to Providence, R. I., where the article is to be turned into oil and oil cake. An extensive factory for extracting oil from the seed of cotton is already in operation in Rhode Island, and one or two companies are forming in Boston with the object of getting up similar establishments there. This is an enterprise in which the South, says the *Picayune*, is greatly interested, promising as it does, to convert an article hitherto worse than useless into one of great commercial value.

[In reference to the use of cotton seed for manufacturing oil, we would ask the planters what they would use as a manure to restore the equilibrium of the soil for succeeding crops of cotton. If the cotton seed which makes such an excellent fertilizer is to be sent away to make oil, then something else must be used as a substitute, or the best cultivated cotton lands will soon cease to yield profitable crops.

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Bending Timber.

The following article is taken from *Dickens' Household Words.* The subject is the process of bending timber, the invention of the well-known Thomas Blanchard, Esq., of Boston, Mass. A decided compliment is paid by its author to the practical genius ot our people :—

"'You may break, but you cannot bend me,' is a phrase that has hitherto been applied indiscriminately to persons who are very heroic or very obstinate. It has also been applied to certain woods, such as oak and lignum-vitæ. A great deal of braggadocio has been put into the unconscious mouths of trees —if by a figure of speech we may talk of trees having mouths at all—about the stubbornness of heart of oak, and about the monarch of the forest never yielding to the storm, which indeed, he seldom does, unless absolutely torn up by the roots; although Shakespeare, who was not a bad observer, talks of the wind making 'flexible the knees of knotted oaks.'

But in plain truth, setting sentiment aside, the unyielding nature of timber has been one of its disadvantages for many practical and scientific purposes. Give a bar of iron to a smith, or place a mass of material under the gentle persuasion of Nasmyth's steam hammer, and you may have what you will made out of it. You may have it molded like clay by the hand of the potter; may expand it, or contract it, shape it, and reshape it; twist and contort it; bend it into a sword or a plowshare, an anchor or a rifle-barrel, a column for some airy, yet substantial palace, or a girder for a suspension bridge. You may lengthen it into rails for the swift passage of steam, or a Menai tunnel to span an arm of the sea, like some gigantic bracelet. Subject metal to the furnace, and you have a fluid stream whereof you may cast an Iron Duke, or any other shape of man or god you please. Sullen and hard at first sight, this ductile substance is your very slave, in fact, a genie of the mine, who waits your bidding to do wonders—a Proteus, to whom is given the power to change into a thousand forms. Not so has it been with wood. Place a piece of timber under the hammer, and it is shivered into fragments; give it to the furnace, and it is consumed. You may saw and join it; you may carve it into fantastic and beautiful designs; but you have not hitherto been able to use it with that facile manipulation which belongs to metal.

One result of this deficiency has been a great circumscribing of the uses to which timber might be put; another result has been excessive waste of material. When, in building a house or a ship, or in making a piece of furniture, it has been found necessary to employ a bar of wood of a curved shape, there were no means at one time of obtaining this curve, but by searching for a branch which was naturally bent in growing (and which, of course, could be met with only rarely) or by cutting a solid mass of timber into the required form. In the latter process all the outlying parts of the wood, all those portions not included in the curve itself were wasted, or were only available for very trivial purposes; for the curve extending across the block and dividing it, would leave only small fragments of the material, of useless shapes, on each side. In the case of metal, the process is easy and obvious enough; you have merely to take a straight bar, heat it, place it beneath the hammer, and coerce it into the needful convexity. Metal, therefore, has had an immense advantage over timber, on the very important grounds of facility and economy; for, in the one case, you only use precisely what you want, while in the other you use more than you want.

When Mr. Jones, having reached the summit of his earthly desires in obtaining the consent of Miss Smith to marry him, (and also the consent of Mr. Peter Smith, and obey mother Smith,) looks out for tables, chairs, and other et ceteras wherewith to furnish that desirable cottage residence in which the happy couple are to take up their abode in company of love and a young servant, he pays more for these household comforts (meaning thereby, the tables, chairs, &c.) than he otherwise would pay, because of the waste of material necessitated in their construction. The case, however, is not now as it was formerly. In a happy moment some mechanical genius bethought him of a process of bending timber by the application of heat to it.

Like the reform bill, however, it was only a step; and, if any old toryfied engineer, with a dream of finality in his mind, had regarded the success already achieved as the *summum bonum* of such matters, Mr. Jones—not to speak of Mrs. Jones—would have had a right to quarrel with him. For Jones might have called his attention to the fact that the timber had a tendency to a debilitated constitution, very awkward in those articles of furniture whereof the first requisite is strength; that it was weak and fragile, not unfrequently breaking under a moderate pressure, and sometimes absolutely unbending, and returning to primitive straightness, like a young lady's carefully got-up curls on a damp day. All this Mr. Jones might have exhibited out of direful experience; but of the reason—the cause of the effect—he would probably have been ignorant. The explanation, however, is not very abstruse. In the ordinary process of bending, the fibre is strained. Thus, any curved piece of wood is weakest in the sharpest part of the curve. Scientific men, indeed, have argued that, for practical purposes, great curves are impossible, and they have defined their theory thus: To bend a piece of wood, you must extend the outer circumference, and compress the inner. Now, as wood is inexpansible, you cannot bend it without injuring the fibre, and consequently weakening the whole mass.

Such was the orthodox theory; but in the same way that the knowing ones on the race-course often make the astounding mistakes in their forecastings to their own great pecuniary disadvantage and the edification of a censorious world, so will it frequently occur that professed scientific men, too mindful of abstract theories to make practical innovations, find themselves suddenly confronted with some new application of those theories, or some complete reversal of them. These audacious exhibitions of scientific hetorodoxy have of late years been more common in America than elsewhere. The active, volatile, knowing States' man is as little disposed to submit to antiquated authority in intellectual matters as in political affairs. He will not have an hereditary monarchy, guarded with fictions of divine right in the regions of discovery, any more than in the physical territories which he occupies. He will have an elective President in the Republic of Ideas, and he will reserve to himself entire liberty to set him aside when his time for being useful has gone by. Every man in that republic shall have a vote; and the best candidate shall carry the day. Therefore has it come to pass that Jonathan, disregarding the assertion that wood cannot be bent without weakening the fiber, has set to work to see how he can overcome the difficulty, and has discovered a method, which, to judge from the accounts given by the most eminent engineers, both of America and England, will be of the greatest service in ship-building and domestic architecture, and in the construction of all pieces of furniture in which it is necessary to employ curved timber. It has been already so employed in the United States, where a Roman Catholic cathedral is surmounted by a dome fashioned out of wood bent by the new process. This dome has been found to be lighter, stronger, cheaper, and more elegant than the domes usually formed of metal, brick, and papier mache.

By this invention, which has been patented in America, and is now just introduced into England, the strength of the wood is increased at least 75 per cent. at a point where strength is most required. The curve, moreover, never relaxes. The timber, as in the old process, is first subjected to the influence of steam, which softens the whole mass, and puts it in a fit state for the action of a machine. The principle of bending, as employed in this new application, is based on end-pressure, which, in condensing and turning at the same time, destroys the capillary tubes by forcing them into each other. These tubes are only of use when the tree is growing, and their amalgamation increases the density of the timber, the pressure being so nicely adjusted that the wood is neither flattened nor spread, nor is the outer circumference of the wood expanded, though the inner is contracted. Now, the error of the former process, as expounded by competent judges, has arisen from the disentegrating of the fibre of the wood by expanding the whole mass over a rigid mold. Wood can be more easily compressed than expanded, therefore it is plain that a process which induces a greater closeness in the component parts of the piece under operation—which, as it were, locks up the whole mass by holding the fibre together—must augment the degree of hardness and power of resistance. The wood thus becomes almost impervious to damp and to the depredations of insects, while its increased density renders it less liable to take fire; and the present method of cutting and shaping timber being superseded, a saving of from two to three-fourths of the material is brought about. The action of the machine throws the cross grains into right angles; the knots are compelled to follow the impulse of the bending; the juices are forced out of the cells of the wood, and the cavities are filled up by the interlacing fibres. In the same way you may sometimes see in the iron of which the barrels of muskets are made, a kind of dark grain, which indicates that the particles of the metal, either in the natural formation or in welding, have been strongly clenched in one another. These specimens are always greatly valued for their extraordinary toughness, as well as for a certain fantastical and mottled beauty.

Another of the good results of this new method is, that the wood is seasoned by the same process as that which effects the bending. The seasoning of the wood is simply the drying of the juices, and the reduction of the mass to its minimum size before it is employed, so that there shall be no future warping. But, as we have already shown, the compression resorted to in the American system at once expels the sap, and a few hours are sufficient to convert green timber into thoroughly seasoned wood. Here is an obvious saving of time, and also of money, for the ordinary mode of seasoning, by causing the wood to lie waste for a considerable period, locks up the capital of the trader, and, of course, enhances the price to the purchaser. Time also will be saved in another way, in searching for pieces of wood of the proper curve for carrying out certain designs. "How delighted," says Mr. Jervis, the United States Inspector of Timber, "will the shipwright be, to get clear of the necessity of searching for crooked pieces of timber! There need no longer be any breaking of bats in the frame, as we have been wont to break them. We shall see numbers one, two, and three futtocks, at least, all in one piece."

An English engineer (Mr. Charles Mayhew) remaks that one of the advantages of the American method is that, "in its application to all circular, wreathed, or twisted work, it not only preserves the continuous grain of the wood, which is now usually and laboriously done by narrow slips of veneer glued on cores cut across the grain, with many unsightly joints, ill-concealed at best; but it will materially reduce the cost of all curved work, which now varies according to the quickness of the sweep, and will give the artist greater freedom in his design, by allowing him to introduce lines which are now cautiously avoided, in order to prevent the cost of their execution." Dr. Hooker, Mr. Fairbairn, Mr. Rennie, Mr. Galloway, civil engineer, and other eminent scientific men, confirm these judgments. A specimen of bent oak now lies before us, and exhibits a beautiful continuity in the sweep of the fibres.

Timber-bending has reached a new stage of development, and it is not too much to anticipate that it will have considerable influence on the industrial arts."

The Task of Inventors.

The following is an extract from a lecture recently delivered in Newark, Ohio, by Joseph E. Holmes, Esq., an intelligent engineer and mechanic :—

"Inventors, yours is the task to deal with Nature, and her laws; and a wondering world, amazed at what you have already evolved from that mysterious book, are looking on your efforts; not like those who persecuted Gallileo; no longer like those who called the immortal Fitch, Watt, and Fulton madmen, but full of faith and hope that the workings of the mighty laboratory may yet be understood in all its departments, and made to subserve the varied wants of man. Step by step has the shrewd observer of nature worked among the elements—the winds, the waters, the vapors, the lightnings, and heat—and they have become his willing servants, and by their aid he has wrought metals, and mines, and woods, and stones, and yet knows little compared with that which shall yet be revealed. A vast field is before the inventor, but every new discovery adds new light to his pathway, enabling him still more clearly to see and prepare for the use of our common humanity things now hidden and unknown."

To Observe Jupiter's Satellites.

MESSRS. EDITORS—There are thousands of the readers of the SCIENTIFIC AMERICAN who would gladly avail themselves of an opportunity of seeing the satellites of the planet Jupiter, provided they had the means.

Every person can witness them by reflection, using a looking-glass for this purpose. On a clear night take a good looking-glass, and—either at the window or out-doors—so position it as to receive the impression of this planet. By a close examination of the planet as reflected in the glass, all its satellites will also be observed, provided none of them are eclipsed. It is rather remarkable, however, that although these satellites can thus be seen, while they cannot be noticed with the naked eye, that neither Venus nor the Moon can be seen so distinctly by reflecting them in the glass, as they can by observing them with the naked eye. VULCAN.

Cambridge, Mass.

The Adulteration of Gold.

It had been stated in the columns of the *Tribune*, that certain parties in this city, possessed the secret of amalgamating with gold a cheaper metal, the presence of which could not be detected at the Mint or the Assay Office. The Director of the Mint has publicly denied this, in a card, and S. F. Butterworth, the Superintendant of the Assay Office has also made a similar denial on the part of the Assay Office. He says :—

"I beg leave to state, therefore, that not a particle of evidence exists at this Office, or has been presented to it, that the alleged experiment has ever been made. The whole matter rests only upon the *ipse dixit* of 'a modern chemist.'

"It is proper to add, that gold exists in a variety of forms, some of them possessing not the slightest resemblance to gold; and that a 'modern chemist' might easily practice a deception even upon intelligent witnesses. If gold in one of these disguised forms be melted up with a given quantity of gold coins, an apparent increase of gold will be the result This solution of the mystery best accords with the facts that have transpired."

To this the *Tribune* answers :—

"Mr. Butterworth states, positively, that not a particle of evidence exists at the Assay Office that the alleged experiment has ever been made. We would respectfully suggest that the Assay Office is not precisely the place to look for evidence in such a case as this. If the Assay Office had any such evidence, the experiment could, of course, never have been successfully performed. The full record of the transaction is, however, on the Assay Office books, where we have seen it."

This answer is rather cloudy, and requires explanation. The meaning of the language is, that the experiment referred to is unknown in the Assay Office, and yet it is recorded in the books of the Office. We believe that there is not sufficient evidence on record, that gold can be amalgamated in any manner with any cheaper metal, so as to escape detection by a chemist.

Fatal Effect of the Breaking of a Circular Saw.

Recent news from San Francisco relate that a person was killed in that city by the breaking of a circular saw. The person killed was standing near to it while it was running at a high velocity, when it broke in pieces, and a part of it passed through his skull.

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New Inventions.

Wilson's Head Rest for Travelers.

What miseries have been endured by travelers, especially on railroads, for want of a suitable *rest* for "the weary head." An invention long sought after to meet this great want for every traveler has at last been struck off by the fertile brain of a well-known inventor, whose name it bears. It is so made as to be worn or supported upon the back or shoulders of a person, and it supports the head without being attached to a seat, or anything but the body of the wearer, whose head it supports, we may truly say, "in the lap of luxury." It can be folded up, and carried easily in the pocket, and every railroad traveler can thus furnish a head rest for himself, and sit at ease asleep or awake, by night or day. For persons who travel much by railroad at night, it is one of the best inventions ever brought before the public, and it will, no doubt, soon come into very general use. Measures have been taken to secure a patent for it, and more information may be obtained by applying to the Sole Agent, L. Philip Beers, 473 Broadway, this city.

Injunction for Imitating Trade Marks.

On the 16th inst. a case was tried before Judge Hoffman in the Superior Court, this city, and an injunction issued to restrain the defendant—W. Johnson—from imitating the trade marks on soap of the plaintiffs—James B. Williams & Bros. The Judge said :—

"In this case it is very clear that the plaintiff was the original claimant to the trade mark in question, and that the defendant, his agents, and others must be restrained and enjoined from selling, or in any way disposing of any soap in boxes or other packages with labels or wrappers containing the words 'genuine Yankee soap,' printed or written, or from advertising, selling, or offering to sell any soap whatever—unless the same has been manufactured by or procured from the plaintiffs—as and for genuine Yankee soap, and also from using the words in connection with the soap manufactured and offered for sale by him, and also for assimilating in any way, or using any imitation of the trade marks of said plaintiffs."

Patent Cases.

Page's Saw Mill.—At Albany, N. Y., on the 13th inst., a case for the infringement of Page's patent for improvements in circular saw mills, was decided in the U. S. Circuit Court, Judge Hall presiding. The parties were Page versus Phillips. A verdict was given in favor of the plaintiff. About fifty suits already commenced, hang upon this case.

Woodworth Planing Machine.—The Chicago *Weekly Tribune* of the 12th inst., states that a case relating to the patent on the above machine, was decided in that city on the day previous, after a lengthened trial of three weeks. The parties were Foss and others, assignees of the right for that city, against Goldie, for infringement of it. The jury gave a verdict in favor of the plaintiffs.

The Splitter.

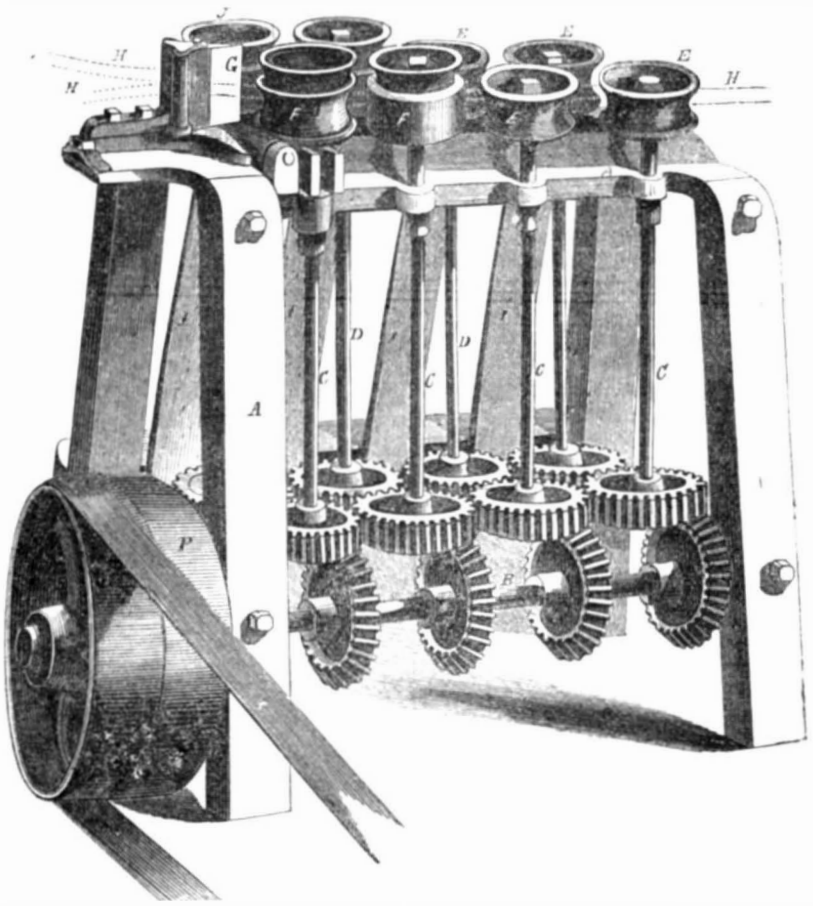
This figure is a perspective view of an improved machine for splitting hoops, for which a patent was granted to Joseph and Sylvester Sawyer, of Fitchburgh, Mass., on the 23d of September last.

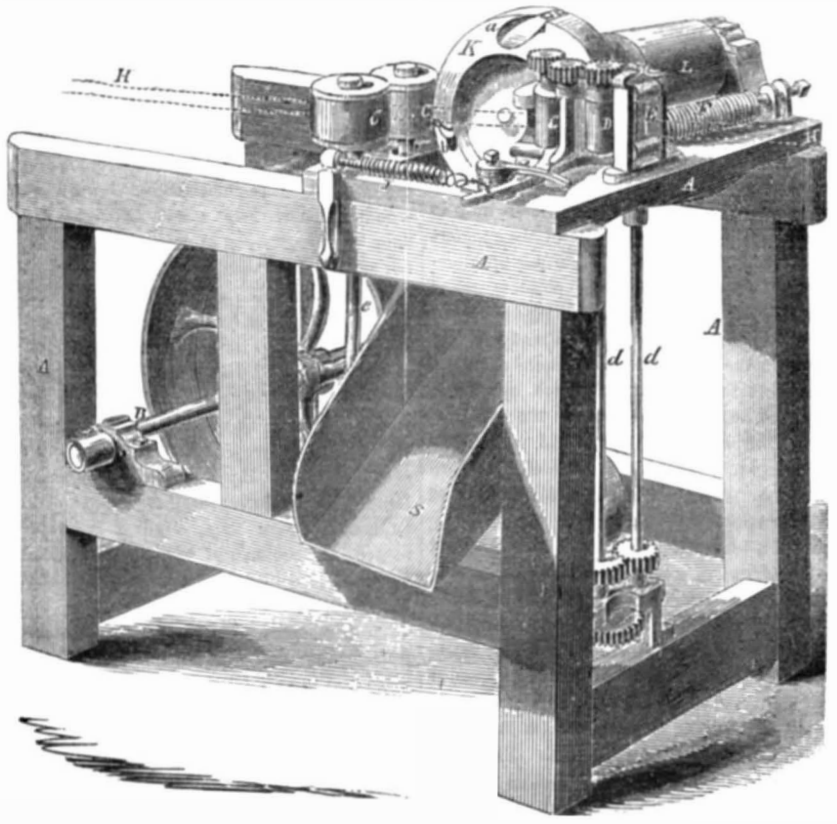
A is the metal frame of the machine, B is the driving shaft, and P the driving pulley. There are bevel wheels on this shaft gearing into corresponding teeth on the bottoms of spindles, C C C C. These are the spindles of the *fixed* feed rolls, which have cog wheels on the lower ends, gearing into corresponding wheels on the spindles, D D D D, of the opposite and self-adjusting feed rolls, and giving them a rotary motion. All the feed rolls, E E F F, have concave or grooved faces. H represents a hoop pole fed in at one end between them, and coming out at the opposite end split into two hoops. If the pole is only of a thickness to make two hoops, it is fed through but once; if it can make four hoops, each half is returned, and fed horizontally to the knife again, but only between the upper flutes of the hind pairs of rolls, F F. It does not require so much power to feed in the half hoops, therefore the hind rolls are sufficient. G is the vertical knife against which the pole is fed, and which splits it. It is self-adjusting, so as to split the hoop pole straight through the center longitudinally, no matter how many knots may be in it. The adjustable rollers are allowed to *give* to the inequalities of the hoop poles; their upper necks are retained in boxes by the broad eliptical vertical springs, I I I I, which allow them to yield and accommodate themselves to knots, &c., of the hoop pole, H; the knife, G, partakes of the same motion, so as to split through the center of the pole always.

As only one set of the feed rolls are self-adjustable, the knife must only move half the distance of these rolls, to stand in the center between them. This is accomplished by having a small rack bar under the table, connected with the collar of the last roll, J. This rack bar takes into a small pinion on the end of a very small stub spindle placed horizontally under the plate of the knife. On its opposite end, this spindle has another pinion half the size of the one mentioned; it takes into a small rack bar on the bottom of the plate of knife, G, and moves it in accordance with the motions of the feed roll, J, but only half the distance. By this simple arrangement the knife always splits through the middle of the hoop pole.

This hoop-splitting machine is very simple, and all its parts are strong, and not liable to get out of order. It runs at the rate of 300 feet per minute, and can be driven by one horse-power. One horse power machines are built at Fitchburgh, Mass., which are warranted to run this machine. The improvement embraced in the claim relates to the method of hanging the knife and connecting it with the self-adjusting feed rolls for retaining it midway between them, and parallel with the direction of the pole, H.

HOOP MAKING MACHINERY.





The Planer.

This figure is a perspective view of the machine for planing hoops after they are split by the above described machine. The patent was obtained by Messrs. Sawyer for this machine on the 6th of May last.

A is the frame, B is the driving shaft, with a driving pulley upon it. Through a series of gear wheels—hidden by the shaving's spout, S,—motion is given to the delivery rolls, C C, (the spindle, *e*, of one is shown) and to the guide feed rolls through spindles, *d d*. D E are the two front feed rolls. H represents a hoop fed in between them in front, and delivered finished at the back end of the frame. The off feed roll, E, is allowed to *give*, and accommodate itself to the inequalities, knots, &c., of the split hoops. Its collar is connected with the coiled spring, F, thus rendering it elastic. The feed roll, D, is fixed on a rigid spindle. G is the guide roll; it is secured on a small swing frame, of which the spindle of roller, D, is the axis. This small swing frame is held in place by the coiled spring, J, which imparts to it elasticity, and allows it to give to knots and inequalities on the hoops, and yet guides the hoops firmly to be planed by the cutters.

K is the cutter head; it is dish-shaped on the face, is secured on a horizontal shaft, and driven by a band passing over pulley, L. It has four knives on its periphery, two, *a*, for removing the rough particles, and two finer ones, *b*, set a little further in, for finishing the inside of the hoops. The cutters revolve in vertical circles; the finisher planers, *b*, are adjusted with great exactness by set screws passing from behind through the cutter head.

Fig. 2

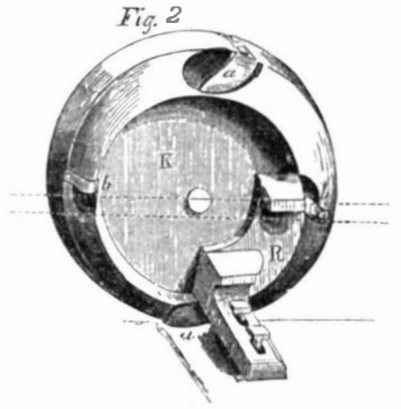


Figure 2 is a perspective view of the vertical gauge plate. Its sole is secured in the table of the frame by adjusting screws, and its gauge plate, R, rises vertically to fit close to the dished part of the face of the cutter head, K, allowing the latter to revolve freely. This gauge plate is rigid, and the inside of each hoop is pressed against it, and prevented from being forced over beyond its line towards or against the cutters.

When knots on a hoop are forced against the adjustable roll, G, the pressure against it is then increased, and were it not for this gauge plate, R, the hoop would be urged by the knots too far towards the cutters, and thus thin parts would be cut in it. This gauge plate, therefore, constrains the hoop to be planed in line always, no matter how knotty it may be.

One of the delivery rolls is also self-adjusting. At the end of the coiled spring, F, of the feed roll, E, there is a set screw for adjusting the tension of the roll; there is also a screw on the opposite end of the shaft of the cutter head for adjusting its position. The pinions on the top of the nigh feed rolls take into one another, to give motion to the guide roll, G.

This machine planes at the rate of from fifty to seventy hoops per minute, and two horse-power is warranted to work it. All the parts are simple, and these two machines form a complete set of hoop-making machinery. The hoops produced by them are well-finished, very accurately split, and are exceedingly uniform in strength. A set of these machines can be seen in operation by applying at R.A Robertson's, No. 115 Pearl street, this city. Further information can be obtained by letter addressed to the American Hoop Machine Co., Fitchburgh, Mass.

SPLENDID PRIZES.—PAID IN CASH.

The Proprietors of the Scientific American will pay, in *Cash*, the following splendid Prizes for the largest Lists of Subscribers sent in between the present time and the first of January, 1857, to wit

For the largest List,	$200
For the 2nd largest List,	175
For the 3rd largest List,	150
For the 4th largest List.	125
For the 5th largest List,	100
For the 6th largest List,	75
For the 7th largest List,	50
For the 8th largest List,	40
For the 9th largest List,	30
For the 10th largest List,	25
For the 11th largest List.	20
For the 12th largest List,	10

Names can be sent in at different times and from different Post Offices. The cash will be paid to the order of the successful competitor, immediately after the 1st of January, 1857.

☞ See Prospectus on last page.

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Scientific American.

NEW YORK, DECEMBER, 27, 1856.

Food—Philosophy—Bread.

This is a subject of the deepest interest to every individual. The care for "his daily bread" exercises the most important influence over every man. The savage satisfies the cravings of hunger by the spoils of the chase, the civilized man by the fruits of the earth. No nation can progress and expand without an abundance of food: hence, agriculture is the soul of all other branches of industry. The experience of civilized man has given the preference to the cultivation of cereals above all other agricultural products, as being the best adapted for his food, as their constitution is analogous to milk, and their effects in sustaining life very similar. Of all the grains which are cultivated, wheat, of which our universal leavened bread is formed, holds the highest rank. Why is this? In answering this question, our intention is to correct ignorant notions which are propagated daily through the press, as matters of science.

The food of man, or alimentary substances, perform two distinct offices in the human system, and must be differently constituted to perform these offices. To convey a clear idea of the operations of the body, we will compare it to a steam engine. The fire to raise the steam in the boiler, for driving the engine, must be continually supplied with fresh coals to maintain the heat; and the friction wears away the engine slowly, hence its joints have to be lubricated continually, and its worn-out parts repaired with new material. It is precisely the same with the human body—it is like a self-supplying, self-acting steam engine. Our food requires carbon and hydrogen to maintain the heat of the body; also nitrogenous substances to supply the waste of the parts of the human machine—muscle, bone, &c.—which are composed of nitrogen and carbon; lime, and other salts. The blood is a current of lubricating and waste-supplying material. That particular food which supplies these demands of life the best, is the most valuable. Of all the grains, wheat supplies the greatest abundance of nitrogenous substances, while all other grains supply enough of respiratory substances; in other words, respiratory substances are more plentiful and more easily obtained than the nitrogenous.

The very common opinion propagated by superficial writers on the food of man, respecting the non-nutricious respiratory substances being less necessary, as food, than the nutricious, is exceedingly erroneous—both are necessary to the development and operation of the human frame.

Our attention has been directed to this subject by an article in the *N. Y. Tribune* of the 18th inst., on the philosophy of fermented bread manufacturing, as carried on in Berdan's Baking by Machinery. It states that "the oven to perform the baking is constructed upon such a principle, that the alcoholic evaporation of one set of loaves is absorbed by another set, so that little, if any of the nutriment of the flour is lost. This is by far more important to mankind than all the ingenious machinery contrived to facilitate the work."

Although we consider this to be the accomplishment of an impossible feat—chemically and mechanically—in any oven yet constructed, we will endeavor, in our next number, to show that it is of very little consequence whether the alcohol, which is a respiratory and not a nutricious substance, is saved or lost in bread. We will do this, not in reference to the oven mentioned, which is a very ingenious one, and confers much credit upon its inventor and constructor, but to throw more general light on the chemical principles involved in bread making.

Reform of Weights and Measures.

We really hope that Congress will soon cease to fritter away valuable time in making party speeches, at the expense of the people, instead of doing real useful work, in reforming bad, and enacting necessary new laws for their benefit. It will be a shame if this Congress adjourns without doing something to effect a reform in our conglomerate weight and measure statutes. The most intelligent men in our country have been calling for such a reform for a number of years; the measure would be a popular one, because it is good; and as it is equally acceptable to members of all political parties, we hope they will soon show some zeal for such a worthy object of legislation.

We do not care so much for the names that may be adopted for different weights. We want a simple uniform system for both weights and measures, and as the centessimal system is the most simple, let it be adopted. We really hope, however, that in the adoption of the centessimal system, the terms of the French, for which some of our scientific *savans* seem to have such a strong predeliction, on account of their jaw-breaking extensiveness, will not be adopted

Milimetre, centilitre, decalitre, myriolitre, also gramme, miligramme, centigramme, chiliagramme, and myriogramme, French terms, which our professors of chemistry now employ too often, may do very well for men who delight in words "of wondrous length and thundering sound," to amaze the rustics, but they are not suitable for such a business-like people as ours. They are too long, have a too near resemblance of sound, and would lead to frequent mistakes in business. The same terms as those now employed in our weights and measures should be retained, only their standard should be changed.

Our centessimal system of coinage is the best and most simple in the world; mills, cents, dollars, *are* short words, distinct, and few in number, just suited to a business people. Let the same objects be kept in view in the terms adopted for weights and measures. The terms inch, foot, yard, rod, and mile may still be retained in centessimal linear measure and so may gill, pint, quart, gallon, and bushel, in measures of capacity. These terms are short and very distinct, excellent for business purposes.

Congress as a duty should now take up this subject so that the people may be instructed in *their* duties, as many of the States have passed laws relating to weights and measures, while Congress alone has the constitutional power to pass such laws. Take up any work on weights and measures, and we find that Maryland, Pennsylvania, Ohio, and New York have standards of their own, all of which are unconstitutional if they conflict with those of the United States, and if they do not they are useless—nonsensical.

In Philadelphia a bushel of oats is reckoned at 24 lbs., in Ohio, 32 lbs.; in Maryland the marine tun is 2000 lbs., in Pennsylvania a tun is 2000 lbs., while the United States tun is 2240 lbs. The State of New York has a special law for liquid measure, 8 lbs. of pure water being the standard for a gallon; it has also a standard bushel of dry measure, amounting to 2211·84 cubic inches—equal to 80 lbs. of pure water—while the United States bushel is 2150·42 cubic inches.

A reform of our weights and measures is positively demanded, so that we may have a uniform system, clear and simple, established throughout our country.

Opinion on the Verdict of the Alliance Railroad Accident.

The cause of the railroad collision which recently occurred at Alliance, Ohio, as noticed by us last week, has been attributed to the recklessness of John Cherry, the engineer of the Cleveland and Pittsburg Railroad train. This is the verdict of the Coroner's Jury which sat at Alliance to investigate the cause of the death of the eight persons, who lost their lives on that occasion. From the evidence which we have read as given in that case, we are of opinion that the verdict does not go far enough. The engineer, John Cherry, did not shut off his steam and break up his train in due season, it therefore dashed into the train of the Pittsburg and Chicago Railroad, on the crossing, while it was standing across the track at Alliance; and so far he is apparently guilty. But was it not supremely stupid and wrong to have the train that was smashed standing across the track at that moment? And does not the conductor of that train deserve censure as well as John Cherry? He could easily have stood on his track, out of the risk of any such danger; while there is always risk of danger in having a train stand in such a position at any time. A running train is liable to have its breaks rendered inoperative, and the engineer cannot easily judge the exact momentum of his train, so as to break up and arrest it within a certain distance of a station. These are probabilities which can easily be guarded against in reference to a collision by a train standing at a station—it can stand out of the reach of danger. Why was not this done in the case of the train that was crushed at Alliance?

(Correspondence of the Scientific American.)

The Woodworth Patent Extension.

WASHINGTON, D. C., Dec. 20, 1856.

EDITORS SCIENTIFIC AMERICAN—I have just been informed by a Member of Congress, that the schemers for the extension of the great Lumber Planing Monopoly—the Woodworth Patent—have, as a last resort, agreed to cut down their demands somewhat. They offer to accept a Bill granting an extension, but providing that all who are now using the Patent, shall be entitled to its *free use* during the term of the extension. "All we ask," say the schemers, "is that only the new comers shall pay us tribute."

In other words, they say, "Only give us liberty *to plunder the public at large*, for a while longer, and we will omit to call on those few private individuals."

By this show of liberality, the schemers hope to influence Congress in their favor; and especially as, by this very move, in connection with large bonuses, they have disarmed all opposition from the present users of the Patent. Many of the users, who but recently were the powerful opponents of the schemers, are now, to their lasting disgrace, hard at work to promote their nefarious designs. Some of these men are brought here for exhibition to the Members of Congress. "See there," say the schemers; "there's a man who makes more Woodworth machines than any other in the country. He ought to know whether it's right to give us an extension Ask *him*." And when they ask him, he tells a plausible story of Woodworth's poverty, talks of justice, and says the patent *ought to be extended*.

My informant tells me, however, that "it won't do." He says the schemers have, perhaps, bought up some few leading Members of the House, but that's all. He is sure they have not influence enough to get a vote. He says there is a deadly feeling of hostility towards it among Members, and as the question is not connected either with Niggers or Kansas, it cannot pass. More anon. B.

The Woodworth Patent Expired on the 26th inst., and we have no information by telegraph, or otherwise, that it has received any attention from Congress. It is, therefore, public property.

We are sorry that we have not on hand the Political Rooster to crow forth our heartfelt joy at this great result.

"This is glory enough for one day," and we will spike our guns until we have more time to hold a *post mortem* examination of this vile carcass. We hope to get time, before long, to pay some merited attention to certain officials, in or about the Capitol, who have no need to be thanked for this result. Vile fellows, they would barter away the bones of the beloved Washington for the wedge of gold or the Babylonish garment.

Reaping Machines in California.

Our correspondent, W. M., who had previously written to us, stating that the reaping machines sent to California had generally proved unsatisfactory and useless, because of their inferior construction—being too weak—has written to us again on the same subject. He has been out among the farmers around Stockton, and has learned from them that harvesting machines, to be successful in that country, must be made much stronger than those which have hitherto been sent there, and, if possible, they must be made with fewer parts. When a machine breaks down in that country, the expense for repairing is very great, and it is also very difficult to get them repaired by competent machinists. Many reaping machines were thrown into the ditches by California farmers, because they broke down so easily, and could not be repaired.

During the past season all self-raking attachments were abandoned, because the crops were light; manual labor was employed to better advantage. If the crops were heavy, however, our correspondent believes that self-rakers would be used, if they were made strong and simple.

How Fires Occur.

A paper box full of matches was exhibited to us a few days ago by Quarterman & Son, John st., this city, which explained how some fires have taken place from causes deemed unaccountable, and how their premises narrowly escaped a conflagration. The box was labelled "Telegraph Friction Matches, manufactured by H. & M. Bentz, No. 104 Norfolk street, N. Y.," and the tips of the whole of the matches had been on fire, and were completely charred. The bunch had been placed in an open tin box set on a shelf, and during the hours of night a rat had knocked it over, the matches had fallen down on the floor, ignited, and burned until they were charred, then most fortunately, went out.

Had they fallen among waste rags, paper, or any combustible materials, they would have set them on fire, and the result would probably have been the destruction of the whole store.

We believe that many fires which could not be accounted for have taken place from similar causes. Had the above-named store been set on fire by these matches nobody would have known the cause; it would, perhaps, have been set down as "the work of an incendiary."

Friction matches should always be kept in metal boxes with spring catch lids, to prevent them falling to the floor, and igniting in the manner described. We cannot be too careful, nor employ too many safeguards against fires.

Rumors from Washington.

It is rumored that the Hon. Charles Mason, now Commissioner of Patents, has been, or will be, tendered a seat in the Cabinet of the President Elect—the post which rumor assigns to Judge Mason being that of Secretary of the Interior.

It has often been said in our hearing that in the difficult and delicate exercise of the appointing power, President Pierce has in no instance done himself and the country greater credit than in the selection of Judge Mason for the office of Commissioner of Patents. This office has, in times past, been most unworthily filled, and now that the right man has been found for the right place, we should rejoice in common with our citizens generally if Judge Mason would consent to remain. But if this cannot be, we should like very much to see him placed in the Cabinet to exercise the supervision over the Patent Office now imposed upon the Secretary of the Interior.—Familiar with all the intricacies of the law, together with a thorough knowledge of the growing interests of the great West, no other man could be selected who is better qualified to discharge the duties of the Secretaryship.

The Solar Compass Bill.

On the 12th inst. a Bill, embracing a large appropriation to the inventor of the "Solar Compass," was defeated. The inventor of the compass is Wm. H. Burt, U. S. Deputy Surveyor, Philadelphia. It is stated to be an excellent instrument, but it had been used without government authority, as a private undertaking by those executing government contracts; government, therefore, had no right to make such an appropriation. The persons who used the instrument should be made to pay for it, yet the decision of Congress, in withholding an appropriation, we believe to be perfectly right.

Steamships for Whaling.

A company in Scotland are about to engage in hunting whales with steamships, instead of the old slow coach sailing vessels, which have hitherto been employed.

What is Sheathing Metal?

It has been decided in the U. S. Circuit Court, this city, that sheet zinc intended for sheathing ships, is not liable to tariff duty.

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Ozone—What is it?

Ozone has been the subject of much observation and discussion, during the past few months; but as is unfortunately often the case, no new light appears to have been thrown on its true nature. Permit me, in a few lines, to trace its history, and to give to your readers some new ideas that have presented themselves to me concerning its cause and effects.

This gas, discovered by Van Maurum, in 1785, while passing a succession of electric sparks through a tube filled with oxygen, and remarked for having an odor like garlic, remained unnoticed till 1840, when Schonbein, a Professor at Basle, celebrated for his discovery of explosive cotton, perceived that, in the decomposition of water by a voltaic pile, the oxygen gas disengaged at the positive pole had the same odor as that remarked by Van Maurum, and perceiving also, that this gas had new properties, gave it the name of ozone, from the Greek word for odor. After a series of experiments, Schonbein concluded that ozone was oxygen modified by electricity, and stated that its principal properties were to dissolve mercury and silver at ordinary temperatures. to decompose iodates, to combine directly with nitrogen in forming nitric acid, and to cause peroxyd of lead; thus fulfilling the *role* of the most energetic of agents.

This curious gas may be obtained in three different ways:—

First, by collecting the gas disengaged at the positive pole of a galvanic pile while decomposing water, with conductors of platina or gold.

Second, by placing in a vial, partly filled with water, a piece of phosphorous, so that a part shall be in the liquid, and a part be exposed to the air.

Third, by filling a glass jar with oxygen, and allowing the passage of several sparks of electricity.

Nothing more was made public concerning this element or gas, (for chemists, because of its resemblance to oxygen, and its phosphoric odor, hesitate to distinguish by the name of element.) till the year 1854, when several scientific celebrities, among whom Becquerel occupies perhaps the first rank, after some deliberation, gave it as their opinion that ozone was simply electrified oxygen, and this is, I believe, the opinion still held by the majority of chemists at this date. What the word electrified oxygen means, is to me, and I have reason to believe with many others, an enigma.

During the search for a clear and definite explanation of this word, a few ideas presented themselves to my mind, which I think satisfactorily clear up the mystery concerning the nature of this gas, and as they may prove so to others, or at least be of service as an inkling for the explanation of some other development, I give them here.

If we consider matter as inert, and its motion a consequence of Divine will, we may conclude that its apparent qualities, depend upon its greater or less division, and its different movements; and also I think, that as the chemical elements, differ in their properties, they do also in their atomic division. As far as our senses are capable of perceiving, the size of atoms increase or diminish in regular order, so that they form, as it were, a ladder of progression. This being the case, how easy it is to conceive that the different properties of the chemical elements, arise from the difference of the size of the atoms composing them the most electro-positive; for instance, containing the grossest, and the most electro-negative, as oxygen, containing the finest. The atoms contained in any element must be of different size, if solely for the reason that there does not exist in nature any two equal things.

Now, if we subject any element to the undulations of heat, light, or electricity, is it not natural to suppose that those of heat which are the largest, will disengage the grossest atoms, and on the other hand, that those of electricity, which are the finest, will disengage the smallest. For an example, take oxygen. To extract this gas, we heat an oxyd, and by means of the undulations of heat, are enabled to disengage some of the grossest parts of oxygen, but if we take water, and by means of electricity, the finest in its undulations, we disengage a gas, it is still oxygen; but finer in its atomic division than that obtained by heat, and instead of being called oxygen electrified, should be known simply as oxygen rectified, Ozone (or as I conceive it, oxygen rectified,) appears to be the true supporter of animal life, and will, I have no doubt, eventually prove the best of remedial agents.

I have, for sometime, been of the opinion, that to ozone alone should be attributed the cause of that increase of vigor, and vitality, that one experiences after taking electro-chemical baths, for in them the patient holds the positive pole, and becomes penetrated by it.

How sensibly we feel its delightful effects, when the lightning of a summer's shower has converted the oxygen of the surrounding atmosphere into this finer gas! Its imbibition gives us new energy, and it is a well known fact, that during the periods when the earth has not been visited by thunder and lightning, fevers and pestilences have been prevalent, and on the other hand that lightning has the effect of dispelling malaria, and giving tone to the general health. M. Vergnes.

[The views of our correspondent respecting the nature of ozone, are certainly original. The opinions he expresses regarding the invigorating nature of ozone, are the very opposite of those that were widely propagated a few years since. Cholera was then attributed to its presence in the atmosphere, and so was the yellow fever.

Cast-Iron Sleepers for Railways.

The following is from the Lancaster (Pa.) *Express*, and refers to the cast-iron sleepers which were illustrated in No. 12. The article of the *Express* deserves attention, and some comments from us, which we present below:

"In the Scientific American of last week there is a very interesting description of an invention by H. Greaves, of England, with a correct figure annexed, representing his cast-iron sleepers for railroads, and stating that four hundred miles of railway have been laid down on various roads in France, Belgium, and England, which have been perfectly successful. The editor of the Scientific American copies from the London *Engineer* the following:—

'A permanant way of cast-iron has been attempted a number of times, and by various persons, always resulting in a failure; one, therefore, said to be successful, must be of interest to every railroad company in the world, because the material is almost indestructible, as it does not decay like wood, and therefore does not cost such immense sums for constant repairs.'

Mr. Greaves, of England, "of course," receives much credit for his invention; but we are pleased to state that he is *not* the original inventor.

Some eight or nine years ago, Mr. Peter Getz, of this city, invented a railway of cast-iron, identically the same improvement now credited to Mr. Greaves, of England, which was a solid casting of sleepers, ties, and chairs. Mr. Getz exhibited his invention to a number of railroad officials, but as he was not considered anything else but a Lancaster mechanic, the self-important engineers on our public works expressed their opinions against the invention, and that it was of no practical utility. Notwithstanding their counter ideas of usefulness, he was persuaded by some of his friends to send his model to Washington and make application for Letters Patent of the United States, with the hope that some railroad company might, at some future day, think proper to test and adopt his invention. In a few months afterwards he received the following from the United States Patent Office:—

Sir—Your application for Letters Patent for alleged improvements in the chairs, blocks, &c., of railroads has been examined and rejected for want of novelty. (Signed)

Edmund Burke,
Commissioner.

No patent had ever been granted for the same improvement to any one else, and consequently there could be no interference with any other patent; yet the opinion of the examiner of the Patent Office was to the prejudice of Mr. Getz, because he (the examiner) could not comprehend its utility, and the worthy inventor's skill, labor, and money were all lost, "for want of novelty;" but now we see that four hundred miles have lately been laid down in France, Belgium. and England, which have been perfectly successful.

We are disposed to believe that the business of the Patent Office has not heretofore been properly conducted; and we do contend that, whenever there is no interference with another patent, the Patent Office has no right to reject the application of an inventor for Letters Patent. The mere opinion of the examiner, because he does not comprehend the utility or novelty of the invention, should not be used against the rights of the inventor. Such decisions have, in numerous instances, proved most disastrous to the worthy inventor, disheartened and prostrated his best efforts, and they certainly retard the progress of the arts and sciences. We do sincerely hope and trust that the Patent Office officials will hereafter encourage and not disparage the inventive genius of our country."

[The comments of our cotemporary in relation to the action of the Patent Office, as shown in the letter of Commissioner Burke, are perfectly legitimate. The patent law of 1836 provides, in Section 7, for reasons and references to be given for the rejection of every application for a patent. The above letter does not comply with the provisions of this law.

The Patent Office is better managed now than it was nine years ago, and if Mr. Getz were now to make application for a patent he would not be rejected by the simple *ipse dixit* "want of novelty."

We do not know the specific nature of Mr. Getz's improvement in railroad sleepers, but neither he nor Mr. Greaves are the first inventors of cast-iron sleepers. They were proposed twenty years ago by Mr. Reynolds, in England, and it is ten years since (1846) since Mr. Greaves first introduced his sleepers. But it requires time and experiment to test the value of any invention of this kind, and we therefore presented the engraving of Mr. Greaves' sleepers, with a portion of his letter, which appeared in a recent number of the London *Engineer*, to show our railroad engineers the opinions of its inventor after it has been tried for a number of years.

A city cotemporary, in a fussy attempt to be superlatively smart on all railroad matters, criticized our remarks on the sleepers referred to, and entered into a long rustic rigmarole quite foreign to the question, about stone sleepers, and their unfitness for railroads.—The language we employed respecting them was not so favorably strong as that used by that great authority in such matters, D. K. Clarke, C. E. He says: "There are several advantages in this system (referring to these sleepers): the form of the sleeper is strong; it holds well in the ground; the chair is not liable to be detached; the whole bearing surface is directly beneath the load, and the ballast is always kept dry and *elastic*."

Scarlatina.

A member of the Massachusetts Medical Society sends to the Boston *Transcript* the following remedy for this much-dreaded disease, which is now prevalent, and very fatal in many places:—

"Nothing less than a desire to save life urges me to address a few words to the public upon this terrible disease. Last week there were no less than twenty-five deaths by Scarlatina in this city. While the epidemic is so prevalent and fatal it seems very important that attention should be called to the prophylactic virtues of *Belladonna*. That these have been so little known and acknowledged I must think is owing to its having been first brought forward as a specific by Hahnneman, the father of homœopathy, it being thus looked upon with distrust from its connection with this system. Many eminent physicians, however, who entirely reject homœopathy, have published their opinions in its favor, and there exists an amount of evidence abundantly sufficient to establish its efficacy.

Moreover, the remedy is cheap, safe, and comparatively harmless. Nothing more is requisite than a tumbler of water containing four or five drops of Belladonna tincture, if obtainable, if not, about two grains of the extract, perfectly dissolved. Of this an adult may take a teaspoonful, a child a half or a quarter as much, according to age, repeating the dose every four or five days while the epidemic is in the neighborhood, or every day, if there be any known exposure to it. The quantity taken should be less, if it causes dilated pupils, irrascibility, and disturbed sleep. It is a mistake to suppose that this use of Belladonna will always prevent Scarlatina. It only modifies it, as a general rule, and destroys its malignancy. But so effectually does it do this, that in not less than 200 or 300 cases of apparent exposure to the infection where I have given seasonably of the Belladonna, I have never known one fatal case to occur."

Scarlet Fever and Small Pox.—Having much experience in the cure of scarlet fever and small pox of the most malignant type, I would thank you, for the sake of humanity, to publish a recipe, which, if faithfully carried out, will cure forty-five cases out of every fifty, without calling on a physician:—

Scarlet Fever.—For adults give one tablespoonful of good brewer's yeast in three table spoonsful of sweetened water, three times a day, and if the throat is much swollen, gargle with the yeast, and apply yeast to the throat as a poultice, mixed with indian meal. Use plenty of catnip tea, to keep the eruption out on the skin for several days.

Small Pox.—Use the above doses of yeast three times a day, and a milk diet throughout the entire disease. Nearly every case can be cured, without leaving a pock mark.

Dr. Wm. Fields.

Wilmington, Del., December, 1856.

The Moon's Rotation—Completed.

The Editors of the *Vermont Chronicle*, in criticising an article in our columns on the above subject, attribute to us a belief in the opinion that the moon has no rotation on its axis. They volunteer a few instructions for our enlightenment, but in doing so they show themselves unacquainted with our views "uttered and unexpressed," and not only this, but the real question itself. They use the terms "looking north, south, east, and west," as the moon revolves around the earth, in explaining its motion, but this is all *moonshine*. We have drawn attention, occasionally, to the fierce controversy waged on this subject for more than a year past, in the London papers, and have rather ridiculed both parties, (as did Mr. Conger in a former number,) distinguished though some of the controversalists are as astronomers. We have refused to publish numerous communications sent to us on the subject for reasons given in a former number.

That the moon has a rotation, *per se*, on her axis, as she journeys with the earth around the sun, no one can doubt who is at all acquainted with mechanism and astronomy. Every revolution which she makes around the earth is also a relative rotation on her axis. The term "revolution of the moon around the earth" always conveys to us the idea of a rotation on her axis in its course around the sun; but the terms "the moon's axial rotation and sideral revolution round the earth," as employed in works of astronomy, convey the idea that the moon has also an independent motion on her axis, combined with its motion of revolution around the earth. This motion should be like that given to the ball of an engine governor, if the arm which connects it to its vertical spindle were rotated by a pinion once during its revolution round its spindle. If it received such a motion it would not always present the same face to its center of revolution—like the moon to the earth. It would then have a motion of all the particles on its surface continually traversing its path of revolution, like a rifle bullet whistling in its flight.

Some contend—and with apparent good argument—that the term "axial rotation" should only be used in regard to a body in motion which changes its side to the center of its path.

Our foreign cotemporaries contain many notices, lately, of the increase of the metal alumina, and a great reduction in its price.

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T. W. L. C. of La.—It would be a waste of money and time to get up engravings of your article on the moon's rotation on her axis. We called upon those who had engaged in the controversy to get up models to demonstrate their ideas, being convinced that this was the only satisfactory method to settle the matter.

A. W. D., of Brooklyn.—Gold cannot be destroyed by any known cause whatever, mechanical or chemical.

W. M. of Iowa.—If the mercury of a thermometer were not enclosed in an air-tight tube it would soon oxydize and become useless for the purpose.

C. C. A. Minnesota. The opening of the gate of a water wheel should be larger than the openings of the wheel. in the exact ratio of the difference of velocity of the water at the gate and at the wheel—no more and no lass.

S. A. H. of Ala.—Several patents have been issued for machines for cutting up sausage meat If you will send us a model or a sketch and description of your invention we will examine and report our opinion upon it. If you had given us your post-office address we should have sent you a circular of instructions.

A. A. Kennedy, of Rockford, E. Tenn., wishes to correspond with some manufacturer of chair seats, in this city. He also wants a machine for making splits for chairs, of oak and cane.

W. H. D. of Mass.—Your plan for constructing a raft for temporary use, involves nothing new. Sailors know very well how to construct a raft in this manner, it having been frequently done in cases of shipwreck; in fact, it is the usual mode of construction, when barrels or water casks can be obtained, which is not always the case in such an emergency.

W. M. of Cal.—The address of Seymour & Morgan is at Brockport, N. Y., C. H. McCormick, of Chicago, Ill. These parties own patents on reaping machines. You had better correspond with them direct. We do not understand your question in relation to the bar of oak or iron You can use any part of your machine for the purpose of making experiments. This use is not considered an infringement of patents in the eye of the law.

D. P. J. of N. C.—The cheapest way for you to raise water from the river, 60 feet below your house, is by a chain pump.

P. J. H. of Ind.—There is no plan so good for preserving eggs in the shell, as the milk of lime. Make it as thick as cream. The eggs so preserved are not suitable for boiling to eat, but answer well for making cakes and frying with ham.

J. A. S. of N. Y.—You have no right to use any part of a machine on which the claims of some other person's patent rests. You are as much an infringer if you use parts on which the patent exists, even if you have a patent on other parts of the machine, as if you had no patent.

J. R. A. of N. Y.—There is nothing new in your safety auge. A patent was refused some time ago for a similar contrivance to damp the fire by steam when the water got low.

G. W. H. of Ill.—Morfitt's work on Tanning is published by H. C. Baird, Phila. Write to him and you will be informed of its price.

S. C. of Mich.—We do not find anything patentable in the geared spool for carpenter's chalk lines. Simply adding gear, for taking up the line with facility, could not be patented.

Jas. Woodward, of Dubuque, Iowa, wishes to correspond with some one who has a good machine for preparing corn husks for mattrasses.

J. H. C., of Md.—A fly-wheel merely regulates the motion of an engine—it cannot increase its power. Three saws eight inches in diameter, will cause more friction than two of twelve inches in diameter, and require a little, but not much more power. Use brass boxes for your journals that run at 1000 revolutions per minute.

Mr. Ross Degan, who obtained a patent in 1854 for a street-sweeping machine is requested to send his present address to this office.

I. M. L., of Pa.—A copyright will not protect the design of your plate, as it is not printed matter. The cost of obtaining a patent will just be in proportion to the work to be done, we could not tell how much without seeing it. Give your bronze work a second coat of varnish after the first is dry; this will render it more durable.

P. H. W., of Ill.—A patent granted to you on the reverse motion arrangement would hold good in its application to other analogous uses. We thank you for your good opinion of our journal, and also for the interest you manifest in its circulation. We have found out, by the most agreeable experience, that we have many excellent friends in all parts of the Union.

H. W. E. of N. Y.—The whirl of climbing beans deserves more attention

P. O. Butts, of Delhi, Ohio, wishes to obtain a machine for bending plow handles.

T. L. B. of Ind.—Communicate with Partridge & Co., dealers in chemicals, Cliff street, this city, regarding the price and demand for pyroligneous acid.

W. J. of N. Y.—You can heat your shop by putting a cast-iron pipe under your steam boiler, connecting it with pipes 130 feet long, driving the air in at its mouth and forcing it through the shop and the other rooms you describe; but we advise you not to do it. The air driven through a red-hot pipe in a furnace, is unfit for respiration; it would injure the health of all those employed in your establishment.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, Dec. 20, 1856:—

R. J. N. of Pa., $25; W. T. of Tenn., $25; S. P. W. of N. Y., $25; C. T. W. of O., $15; S. P. of Cal., $50; H. G. A. of Cal., $50; O. C. of Ill., $30; R. C. W. of Ill., $30; A. F. S. of Pa., $20; E. H. H. of Ga., $30; S. B. of N. Y. $230; R. R. of Pa., $25; J. & K. of Mass., $25; H. C. W. of N. Y., $30; G. T. T. of Mass., $250; W. S. of Ind., $30; J. B. T. of L. I. $30; A. W. L. of Mass., $12; D. P. F. of Wis., $25; P. D. of N. Y., $30; T. A. D. of Cal., $20; J. M. of O., $30; G. O. of N. Y., $25; D. S. B. of N. Y., $30; W. G. C., of N. Y., $650; J. H. Jr. of N. Y., $55; I. S. C. of Pa., $25; L. S. C. of N. Y., $27; J. A. of N. Y., $25; S. N. S. of N. Y. $50; F. J. F. of N. Y., $25; A. M. C., of N. Y., $25; O. & W. N. of Ct. $25

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 20:—

C. S. P. of N. Y.; J. A. of N. Y.; R. J. N. of Pa.; R. C. W. of Ill.; W. F. of Tenn.; S. N. S. of N. Y. (2 cases) S. P. W. of N. Y.; M. P. of N. Y.; F. J. F. of N. Y.; L. S. C. of N. Y.; O. & W. N. of Conn.; D. P. F. of Wis.; R. R. of Pa.; A. W. L. of Mass.; S. B. of N. Y.; A. M. C. of N. Y.; I. S. C. of Pa.

Important Items.

Give Intelligible Directions—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure but no name of State given, and often with the name of the post office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post of fice at which they wish to receive their paper, and the State in which the post office is located.

To the Press—Any newspaper or publication which is entitled to the Scientific American on the terms prescribed in the Circular which was sent from this office a few weeks ago, and does not receive it regular is requested to make complaint to this office, when the omission shall be promptly corrected.

Foreign Subscribers—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the next volume. [It is important that all who reside out of the States should remember to send 25 cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

Complete Sets of Volume XII Exhausted.—We regret that we are no longer able to furnish complete sets of the present volume. All the back numbers except 1, 2, 6, 9, 10, 11, and 13, we can yet furnish, if new subscribers desire to commence back to the beginning of the volume; but unless they specially request to the contrary when making their remittance we shall commence their subscription from date of receipt of the order.

Inventors Sending Models to our address should always enclose the express receipt, showing that the transit expenses have been prepaid. By observing this rule we are able, in a great majority of cases, to prevent the collection of double charges. Express companies, either through carelessness or design, often neglect to mark their paid packages, and thus, without the receipt to confront them, they mulct their customers at each end of the route. Look out for them.

Patent Laws and Guide to Inventors.—This pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office Price 12 1-2 cents per copy. A Circular, giving instructions to inventors in regard to the size and proper construction of their models with other useful information to an applicant for a patent, is furnished gratis a this office upon application by mail.

Receipts—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

Patent Claims—Persons desiring the claim of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office stating the name of the patentee, and date of patent when known, and enclosing $1 as fees for copying.

Literary Notices.

Blackwood's Magazine—The number for the present month, of old "Ebony," is a first rate one. It contains a keen criticism of Ruskin, the story of "The Athelings," is continued; "The Scot Abroad as the Man of Art," is a tolerably good article; the other articles are all good. Published by Leonard Scott & Co., No. 54 Gold street.

The Edinburgh Review—The number of this able Review for this quarter, re-published by Leonard Scott & Co., 54 Gold street, contains ten essays of extraordinary ability. One on "The Political Crisis of the United States," has been made the subject of debate in the U. S. Senate; it is said to have been written by a gentleman in New York. An article on "The Life of Arago," is well written.

The Plow, Loom and Anvil has passed into the hands of J. A. Nash, who has now the control of its editorial management. Mr. Nash is an accomplished writer upon agricultural subjects, and moreover, we believe, possessed of refined tastes and gentlemanly sensibitities, who will conduct the journal with judicious care and propriety. We hope Mr. Nash may find himself reposing upon a bed of roses. We wish him success Terms $3 per annum; monthly. Office No. 7 Beekman street, New York.

The Home Physician—Two Parts—the first part containing homœopathic treatment for adults; the second for children, with suitable medicines prepared by the author to accompany each book These are valuable little books, and to those unacquainted with the science of homœopathic treatment, we would recommend them. The author is personally known to us as a skillful practitioner in the Homœopathic school. Each Part of the book, with a small case of medicines will be sent to any person, by mail, on receipt of one dollar and three 3-cent postage stamps to pre-pay the expense of postage on book and medicine. Address G. Glewetz, M. D., Stratford, Conn.

Gregory's Organic Chemistry.—This volume is the second of Gregory's Elements of Chemistry, and completes the work. We have already noticed the previous volume on Inorganic Chemistry. Organic Chemistry treats of substances which form the structure of organized beings and of their products—animal and vegetable. The two volumes of Dr. Gregory's Elements of Chemistry, now published by A. S. Barnes & Co., John street, this city, is the most complete work of the kind in our country. The great faculty of Dr. Gregory is compactness and clearness of description. These volumes are edited with ability by Dr. Sanders, of Cincinnati, O. No chemist can do without them; they are excellent handbooks, and adapted for public and private students of the science.

Morgan Horses—C. M. Saxton & Co., 140 Fulton st. this city, has the Premium Essay on the above-named famous breed of horses, by D. C. Linsley, of Vermont. It also contains hints for breeding, breaking, and the general management of horses. It is a neat volume, well illustrated with plates; everything about the Morgan horses is to be found in this book, which is written with spirit and a knowledge of the subject.

Terms of Advertising.

Twenty-five cents a line each insertion. We respectfully request that our patrons will make their advertisements as short as possible. Engravings cannot be admitted into the advertising columns.

☞ All advertisements must be paid for before inserting.

WANTED—A Machine for Cutting up card sheets into cards, with latest improvements. Please send description, and state price, and where it can be seen. Address EBBINGHAUS & DEBATTIS, No. 140 Fulton street, New York City. 1*

IMPORTANT TO INVENTORS.

THE UNDERSIGNED having had Ten years' practical experience in soliciting PATENTS in this and foreign countries, beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousand* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of Engineers, Examiners, Draughtsmen, and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the Scientific American. This paper is read by not less than 100,000 persons every week, and enjoys a very wide spread and substantial influence.

Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency.

MUNN & CO.

American and Foreign Patent Attornies, Principal Office 128 Fulton street, New York.

FOR THE MILLION—I will forward illustrated circulars of my Hand Corn Planter, patented Sept. 9th, 1856, free of postage to all applications. Address HEMAN B. HAMMON, Patentee, Bristolville, Trumbull, Co., Ohio. 1*

ENGRAVING ON WOOD and **MECHANICAL** DRAWING, by RICHARD TEN EYCK, Jr., 128 Fulton street, N. Y., Engraver to the Scientific American. 16tf

COMMERCIAL AGENTS, able and honest Men from N. England or N. York. A. W. Harrison, Phila. 16 13*

LANE & BODLEY'S POWER MORTISING and Boring Machine has been nearly four years in the market, and is unequalled for the lightest and heaviest work, on framing or hubs. Six sizes manufactured. For prices and minute description, address LANE & BODLEY, Cincinnati, O. 15 4*

VERGNES' ELECTRO-CHEMICAL BATHS, No. 710 Broadway—Under the direction of Prof. Vergnes, the discoverer. Medical Attendant, C. Prince, M. D. These Baths are efficacious in all diseases arising from imprudent use of minerals, such as mercury, nitrate of silver, etc. Also for the cure of Rheumatism, Chills and Fever, Paralysis, Debility, etc. 16 1*

HARRISON'S GRIST MILLS—20, 30, 36 and 48 inches diameter, at $100, $200, $300, and $400, with all the modern improvements. Also, Portable and Stationary Steam Engines of all sizes, suitable for said Mills. Also Bolters, Elevators, Belting, &c. &c. Apply to 3 e3wtf S. C. HILLS, 12 Platt st., N.

BARREL MACHINERY CROZIER'S PATENT —This machinery was awarded a gold medal at the late Fair of the American Institute. One set of these machines, driven by 12-horse power, and with the assistance of 20 men make an average of 600 barrels per day of 10 hours, as our factory in Oswego, N. Y. A portion of the machinery may be seen at Messrs. Leonard & Wilson's, 60 Beaver st., New York, to whom reference may be made. For machines and rights address,

WELCH & CROZIER,
15 10* Oswego, N. Y.

NOTICE—I will receive applications until the 1st of June for the right to make and sell my patent Double-Jointed Buckle, the best yet invented; one answering for the whole wardrobe, and will last to the third and fourth generation, if well made. Address,

WILLIAM SLADE,
15 7* Gum Creek, Dooly Co., Ga.

FOR SALE AT A BARGAIN on the Roanoke River—A Steam Saw Mill, 12 inch. cylinder, 2 1-2 foot stroke, 2 boilers, 32 inch. by 32 feet; one vertical single saw, two shingle machines for cutting 24 inch. shingles, with all the necessary fixtures in good order. Also from 800 to 1000 acres of cypress timber, very fine. Also one Page circular saw. For further particulars address, EDGAR HANKS.
15 4* Plymouth, N. C.

THE PATENT EMPIRE POWER LOOMS for high speed, increased production of cloth, economy in operating, and superior make, are manufactured at the Empire Loom Works, Stockport, Columbia county N. Y. W. BENJAMIN & CO.,
14 8* No. 7 Whitehall st., N. Y.

ASSIGNEE'S SALE—New Haven, Conn.—All the property belonging to the estate of John Parshley is offered for sale in lots to suit purchasers. One factory on Grape vine point, a very desirable location for any kind of manufactory. Also one factory in the city, 100 feet long, 75 feet wide, and 4 stories high, with foundry attached. Tools of all description, suitable for a large machine shop, such as Lathes, Planers, Drills, &c., finished and unfinished. The above property, including building, tools, and stock, must be sold, and cash will buy them at a great discount. N. D. SPERRY, Trustee,
14 4 New Haven, Conn.

BEE'S PATENT SAFETY ANNOUNCING Boiler Feeder—the only boiler feeder extant which contains a principle of safety—will pay its cost every month of use in economy of fuel, &c. Address BENJAMIN F. BEE & CO., North Sandwich, Mass. 14 5*eow

WRIGHT'S PATENT SECTIONAL SPRING BED BOTTOM—The cheapest and most perfect article in use. LIPPINCOTT & CO., Manufacturers, No. 1180 Broadway, N. Y. 10 3m*

TO FANNING MILL MAKERS—Lewis & King, Seneca Falls, N. Y., manufacturers of a superior article of Fanning Mill Irons, are now prepared to make arrangements for supplying castings on the most reasonable terms for the year 1857. 9 9*

SHOE TOOLS—Best of all kinds at the lowest prices manufactured by GEO. WILLIS, Worcester, Mass. 8 13*

1000 AGENTS—For unparallaled inducements. Send stamp to box 533, Detroit, Mich. 16 2*

PORTABLE STEAM ENGINES.—S. C. HILLS No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 2 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2 1-2 horse can be seen in store, it occupies a space 5 by 3 feet, weighs 500 lbs., price $240; other sizes in proportion. 1 e3w

SWISS DRAWING INSTRUMENTS—A full stock of these celebrated instruments always on hand. Catalogues gratis. AMSLER & WIRZ,
7 6*eow 211 Chestnut st., Philadelphia.

RUNYAN & HOSTER, of Seneca Falls, Seneca County, N. Y., are now prepared to fill orders for any or all sizes of Lewis' Improved Direct Double-Acting Force Pump, the best pump in use. A full description of it may be found in the Scientific American of March 22d, 1856. Rights are also offered for sale by States or otherwise. R. & H. refer to J. T. Miller, Esq., P. M., Seneca Falls, N. Y. 13 12*

A. & J. T. SPEERS' Central Depot for the sale of patent rights, patented articles, &c., No. 212 Broadway, New York. 13 6*

STOVE POLISH—The best article of the kind yet invented for family use. Sold wholesale and retail at 114 John st., New York, by QUARTERMAN & SON. 12 tf

30 HORSE STEAM ENGINE—At the Crystal Palace, called the "Endeavor," the best engine ever exhibited by the American Institute; will be sold low if applied for immediately. S. C. HILLS,
10tf 12 Platt street, N. Y.

NOTICE OF SALE—On account of the death of one partner, one half, or the whole of the City Foundry and Machine Works at Indianapolis, Ind., is offered for sale. The establishment is supplied with valuable lathes, planers, and other tools sufficient to employ 100 men, with a large assortment of patterns; also apparatus for casting car wheels, &c. Is now in full operation. Price low, and terms of payment easy. Address at the Works, UNDERHILL, GREENLEAF & CO. 14 4*

CAST-STEEL WIRE DRAWERS—Union Works, Patterson, N. J. Orders solicited and punctually filled by CHAMBERLIN & CO. 14 8*

PORTABLE STEAM ENGINE—An engine of 12-horse power in complete order, for sale by HABRICHT & PARISH.
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WOODWORTH'S PATENT PLANING MAchines—Patent expires Dec. 27th, 1856. Machines constantly on hand, together with steam engines and boilers of all sizes. Lathes, planers, drills, circular saw mills, belting of leather and rubber of the best quality Orders respectfully solicited at the Machinery Depot, 163 Greenwich st. A. L. ACKERMAN. 13 8

FORBES & BOND, Artists, 89 Nassau st, N.Y., Mechanical and general Draughtsmen on wood, stone, &c

INSURANCE FOR MANUFACTURERS AND Mechanics.—The undersigned have made arrangements with reliable New York and Philadelphia Insurance companies to insure all classes of hazards. Flour, cotton, paper, saw, planing mills, iron foundries, tanneries, breweries, machine shops, &c., will be placed in sound companies at established rates. On receipt of application we will name companies and rates. Every information furnished and risks placed gratuitously. Apply by letter or personally to T. JONES, JR. & CO.,
Insurance Agents & Brokers, 6 Wall st., N. Y

Note—"The Insurance Monitor" is published by T. Jones, Jr., No. 6 Wall st., and gives every information on insurance, standing of Companies, &c. Price $2 per annum. To those insuring with us, $1. 13 4

PATENT ORNAMENTAL LATHE for bedstead teapoy and null turning, with great perfection, without a pattern. Rights and lathes for sale by P. C. Cambridge, patentee, North Enfield, N. H. LEONARD & WILSON, 60 Beaver st., N. Y., Agents. 8 10*

LAP-WELDED IRON BOILER TUBES.—Prosser's Patent.—Every article necessary to drill the tube-plates, and set the tubes in the best manner.
8 tf THOS. PROSSER & SON, 28 Platt st., N. Y.

WOODWORTH'S PATENT PLANING, Tonguing, and Grooving Machines.—The subscriber, from his twenty-four years' experience both in the use and manufacture of these unrivalled machines, is prepared to furnish them of a quality superior to any that can be procured elsewhere for the same money. Prices from $85 to $1550. Also several good second-hand Planing, Tonguing, and Grooving Machines for sale. Rights for sale in all the unoccupied towns in New York and Northern Pennsylvania. JOHN GIBSON,
5 12* Planing Mills, Albany, N. Y.

MACHINE BELTING, Steam Packing, Engine Hose.—The superiority of these articles manufactured of vulcanized rubber is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. New York Belting and Packing Co., JOHN H. CHEEVER, Treasurer, No. 6 Dey street, N. Y. 48 20*

PAGE'S PATENT PERPETUAL LIME KILN, will burn 100 barrels of lime with three cords of wood every 24 hours; likewise my coal kiln will burn 150 bushel with 1 tuh bituminous coal in the same time; coal is not mixed with limestone. Rights for sale.
45 26 C. D. PAGE, Rochester, N. Y.

50 STEAM ENGINES—From 3 to 40-horse power also portable engines and boilers; they are first class engines, and will be sold cheap for cash. WM BURDON, 102 Front st., Brooklyn. 14 tf

GOLD QUARTZ MILLS of the most improved construction; will crush more quartz and do it finer than any machine now in use, and costs much less. WM BURDON, 102 Front st., Brooklyn. 14 tf

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer.
F. S. PEASE, 61 Main st., Buffalo, N. Y.

N. B.—Reliable orders filled for any part of the United States and Europe. 14 tf

NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.

Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,

Office for sale of rights at 27 State street, Boston, and Lowell, Mass, 45 6m*

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co., New Haven, Conn. 14 tf

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 14 tf

BOILER INCRUSTATIONS PREVENTED—A simple and cheap condenser manufactured by Wm. Burdon, 102 Front st., Brooklyn, will take every particles of lime or salt out of the water, rendering it as pure as Croton, before entering the boiler. Persons in want of such machines will please state what the bore and stroke of the engines are, and what kind of water is to be used. 14 tf

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Science and Art.

Fire.—Slow Combustion and Quick Combustion.

Fire is the gift of Heaven to man, and by its use he is distinguished from all other animals. Not to know the nature and properties of this valuable agent is a voluntary surrender of our dignity. Fire assumes two forms, called slow combustion and quick combustion; in both cases the material burned gives out heat and disappears, nothing happening to attract the eye of a casual observer; nevertheless, slow and quick combustion produce very remarkable results. When substances are burning that are only red hot, they are ungoing the slow combustion; but when they burn with flame, that is called the quick combustion. Illustrations of this difference are common enough. A candle burns with flame—blow it out, and the wick continues to burn for a time red hot. Note the difference of result: while there is flame there is plenty of light, and no smoke; when the flame is extinguished, a strong, odorous vapor arises, familiar to all. A man smokes a segar, and it is undergoing the slow combustion—the fragrant vapor is his delight—but if the same be put into the fire, or burned with flame, there is no smell of burning tobacco. In ordinary conversation the slow combustion is termed "smoldering," and is always known to be taking place by the familiar "smell of fire" as one of the results. This smell of fire is, in truth, the smell of the vapors arising from a substance burning without flame; agreeable when coming from tobacco or a scented pastil, but quite the reverse when coming from fat, oil, or the like. From want of air, quick combustion may sink into the slow combustion: smouldering bodies, on the contrary, burst into flame by the ready admission of air. Strictly speaking, the slow combustion is but an imperfect burning of the consumeable substance, because the vapor that arises is itself capable of burning again; but if the quick combustion take place, the products of the flame cannot be again ignited. We should always burn the coal by quick combustion in firebrick-lined grates; in fact, not as the smoker does with his tobacco, make a rare fume—consume it by slow instead of the quick combustion.

SEPTIMUS PIESSE.

Manufacturing Ornamental Glass.

The last number of *Newton's London Journal* contains the following specification of G. Rees, of Clerkenwell, Eng., for a simple method of producing ornamental stamped glass.

"This invention consists in an improved method of producing figured or ornamental surface on glass; and for this purpose a sheet of finished glass, either white or colored, of the dimensions required, is employed, which is rendered plastic by heat, and pressed between a pair of metal dies, engraved with the design or pattern which is to be given to the glass. After impressing the pattern upon the glass it is annealed, and is then fit for used in windows, or for ornamental purposes.

In carrying out this invention, a sheet of flat finished glass, either white or colored, of the dimensions required, is made plastic by heating it in a reverberatory furnace. It is then pressed between a pair of metal dies or rollers, engraved with the design, pattern, or description which is to be given to the glass. The dies or rollers may have the pattern raised in the one and sunk in the other; or one of them may be plain, according to the character of the ornamental surface that is to be produced. After impressing the pattern upon the glass, it is annealed in the ordinary manner, when it is fit for use in windows, or for decorative purposes.

In order to indicate the application of these improvements, and to show some of the purposes to which they are suitable, the patentee remarks that ornamental surfaces of glass, produced as described, and hollow on their under side, may be ornamented by gilding, silvering, enameling, painting, staining, or otherwise, so as to produce any determined artistic effect. Another description of figured or ornamental surface may be produced by pressing the glass between dies or rollers, so as to leave the required pattern or inscription in slight relief. After the glass has been annealed, the raised pattern may be removed by, grinding, when the pattern or inscription will appear dull upon a bright ground; or flashed glass may be thus treated, that is, white glass coated or covered on one side with a colored glass. In this case the pattern will appear white upon a colored ground, or vice versa.

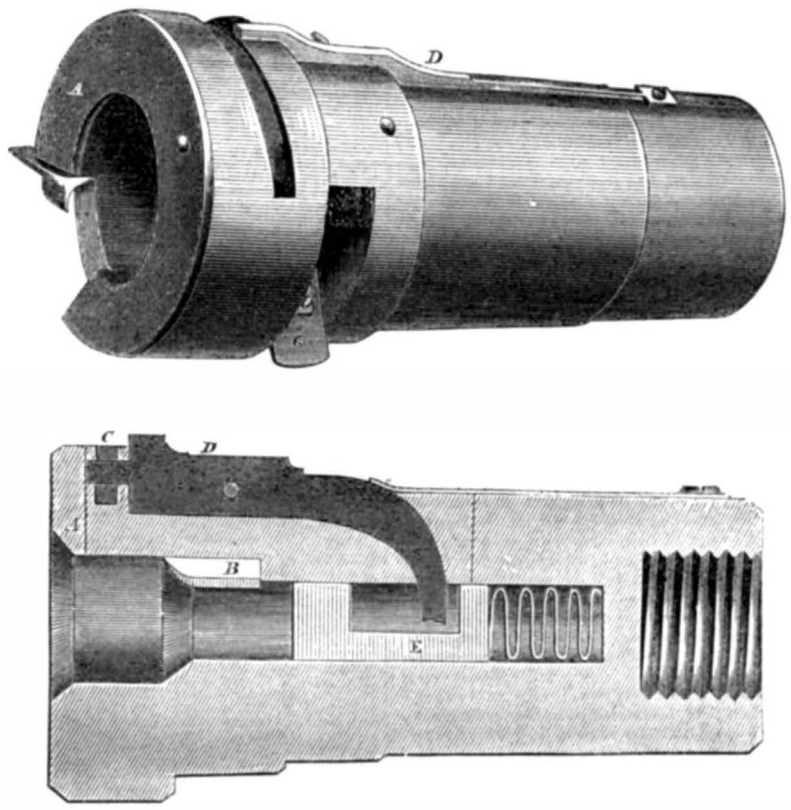
Restoring old Steel Pens.

J. Pimont, of Rouen, France, has obtained a patent for the following method of restoring old steel pens which have been thrown aside as worthless, by long use or bad ink.

The old and injured pens are exposed in a suitable vessel to heat, in a furnace, until their temperature is raised to about a red heat. They are afterwards allowed to cool, and afterwards cleansed from the dirt that may adhere to them. The cleansing process may be performed by shaking them together for some time in a close box containing a little soap and sand.

By this simple process, it is stated, that metal pens hitherto considered to be perfectly spoiled and useless, may be restored to their original state.

CHUCK FOR MAKING BEDSTEAD PINS.



The accompanying figures are views of the improved Chuck of H. Gross, of Tiffin, Ohio, for turning bedstead pins and tenons upon chair stuff.

Figure 1 is a perspective view, and figure 2 is a longitudinal vertical section of the chuck. The body of the chuck is composed of cast-iron, in which three chisels are set. The first one at A, cuts the stick to the size required for the head of the pin; the second at B turns the shaft of the pin to the proper size, and the third chisel at C, attached to the end of lever, D, by pressure of the stick inward, is forced down, and turns the head of the pin, all of which is done without removal or change of the stick until the pin is completed. The end of the lever, D, opposite the chisel is made with a curved shank passing down into the orifice of the chuck, and is operated upon by a follower, E, connected with a spiral spring and against which follower the stick is pressed when being cut, forcing the lever upward at this end, while the chisel at the opposite end is brought down upon the stick at the proper time and place to form the head of the pin.

The chuck is so constructed as to be attached to any common lathe, or used separately, as may be desired, and with which one thousand pins per hour can be made by one person. By removing the lever chisel C, the chuck can be profitably used in turning tenons upon chair stuff; the two remaining chisels being set to turn the two sizes generally used, and which may be changed to larger or smaller size by the screw and slot in the chisels.

The patent for this improvement in chucks for turning bed pins was granted on the 23d of September last; the claim can be found on page 26, this volume, SCIENTIFIC AMERICAN. For further information apply to the patentee, Henry Gross, Tiffin, Ohio.

Restoring Old Silk Ribbons.

Old soiled silk ribbons, which, by many persons, are considered worthless, may be rendered almost as good as new, by the performance of a few of the most beautiful experiments in practical chemistry, which can be executed by any lady. Hard or lute-string ribbons cannot be renovated to give satisfaction; satin, plain soft silk, and figured silk ribbons, are the kind to which we allude.

As maroon is a very beautiful color, and is somewhat fashionable this winter for ladies' bonnets, &c., we will describe how to dye old silk ribbons this color. Take pink, light blue, or salmon colored old silk ribbons, and open them out so as to take out all their plaits. They are now to be all sewed together, so as to make a continuous piece, and are ready for the first operation. Now, put a clean tin pan on the fire or the stove, fill it with soft water: cut up a few pieces of scrap soap in it, and bring it up to the boiling point. When the soap is all melted by stirring the water, the suds should feel slippery between the fingers; if they do not, add a little more soap. The vessel containing the soapsuds should just be of sufficient size to hold the ribbon loosely in it; any more suds would be wasted. Now place the ribbon in the suds and boil it for half an hour, keeping it down under the liquor with a small clean stick whittled to a proper shape. Boiling the ribbon in the soap will remove all the grease and old color. It is now lifted out and washed in water to remove all the soap from it. After this it is stretched out between the fingers, pressed between the two hands, and laid down on a clean table. It is now to be steeped in alum liquor. This is made by dissolving a little alum in a clean stoneware vessel with a little boiling water, then cooling it down with cold water until it is about milk heat. The ribbons are handled for a few minutes in this liquor in such a manner as to lie loose in it, and are sunk under the liquor, where they are to remain one hour. One ounce of alum will be sufficient for a vessel that will contain two quarts of water; this is called the mordant. The ribbons are now taken out and gently rinsed in a little clean cold water, and are now fit to be dyed. Take about four ounces of what is called *hypernic*—red dye-wood—which can be obtained at any druggist's, and boil it for fifteen minutes; and pour the clear liquor into a stone-ware vessel, with as much hot water as will allow the ribbons to be handled freely. Now enter them and draw them between the fingers, and push them down from time to time under the liquor, for ten minutes, when they will have assumed a deep red color. They are now lifted out, and a very small quantity of the extract of logwood, in liquor, is added to the red wood liquor, all stirred together, and the ribbons again entered and handled for ten minutes longer, when they will have acquired a beautiful maroon color. They are now washed in cold water and hung up to dry.

To dress them, they are sponged on the right side with a little weak liquid of dissolved gum arabic, and ironed on the wrong side with a hot flat-iron.

This finished the operations, which, if carefully performed, will render old ribbons, originally worth three and four shillings per yard, almost equal to new, for a cost not exceeding three cents per yard.

There are hundreds of families in our country who have lots of old ribbons laid past, and held to be no better than waste paper. Let them be brought out and treated as described, when they will be found fit for adorning fashionable new silk hats. Many persons are not aware of the fact, that many of the ribbons which they purchase in stores are re-dyed—changed from unsaleable to saleable colors.

North-West America.

At a recent meeting held at Toronto, Canada West, for the purpose of endeavoring to get the control of the whole of the possessions of the Hudson Bay Company into the hands of the Canadian Government, it was stated that the climate of North-West America was much milder than that in the same line of latitude on the eastern part of our continent. Wheat can be cultivated far up on the McKenzie river, and the climate of this extensive region is similar to that of Western Europe.

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